The LADIES' *Diary*:
OR
WOMAN'S ALMANACK,

For the Year of our LORD 1785;
Being the First after BISSEXTILE, or LEAP-YEAR.
Containing New Improvements in ARTS and SCIENCES,
And many Entertaining PARTICULARS:
Designed for the *Use* and *Diversion* of the
FAIR-SEX.

The Eighty-second ALMANACK Published of this Kind.

VIRTUE and SENSE, with FEMALE-SOFTNESS join'd,
(ALL that subdues and captivates Mankind!)
In BRITAIN's Matchless FAIR resplendent shine;
THEY rule LOVE's Empire by a Right Divine:
Justly their Charms the astonish'd World admires,
Whom *Royal* CHARLOTTE's bright Example fires.

LONDON:
Printed for the COMPANY of STATIONERS,
And sold by JOHN WILKIE, at their Hall in Ludgate-Street.

[Price stitched, NINE-PENCE.]

Y. of Christ.		Ys. since.
1600	King Charles I. born - -	185
1603	Q. Eliz. died, K. Ja. succ.	182
1603	A great Plague in London	182
1605	Popish Gun-powder Plot -	180
1616	Shakspeare the poet died	169
1625	K. James died, Cha. I. succ.	160
1641	Bloody Irish massacre -	144
1642	Sir I. Newton born, Dec. 25	143
1649	K. Charles I. beheaded -	136
1658	Oliver Cromwell died -	127
1660	K. Charles II. restored -	125
1662	Royal Society instituted	123
1665	Died of the plague 68,586	120
1666	Great fire in London -	119
1666	War against Denmark decl.	119
1667	Peace with Hol. Fr. & Denm.	118
1672	War against Holland decl.	113
1672	Halfpence & Farth. coined	113
1674	Peace with Holland procl.	111
1679	Habeas Corpus act passed	106
1685	K. Cha. II died, Ja. II. succ.	100
1688	Prince of Orange landed -	97
1688	K. James II. abdicated -	97
1689	Wm. and Mary crowned	96
1693	Hackney coaches established	92
1702	K. Wm. died, Q. Ann succ.	83
1702	War against France declared	83
1707	England & Scotland united	78
1713	Peace with France procl. -	72

Y. of Christ.		Ys. since.
1714	Q. Ann died, K. Geo. I. succ.	
1715	Rebellion in the north -	
1716	A very great frost - -	
1726	Sir Isaac Newton died -	
1727	K. Geo. I died, Geo. II. succ.	
1739	War against Spain declared	
1739	A very great frost - - -	
1743	A great comet appeared -	
1744	War against France declared	
1745	Rebellion in Scotland - -	
1748	A general peace - - -	
1750	Westminster bridge finished	
1752	Date and Calendar altered	
1756	War against France declared	
1760	K. Geo. II. died, G. III. succ.	
1762	American philos. soc. instit.	
1762	War against Spain declared	
1763	Peace with France & Spain	
1765	Otaheite discovered - -	
1770	Blackfriars bridge finished	
1772	A revolution in Denmark	
1772	A revolution in Sweden	
1775	War against America begun	
1776	America declared independ.	
1778	French treaty with Americ.	
1778	War against France begun	
1779	War against Spain begun	
1780	War against Holland begun	
1783	A general Peace -	

BIRTH-DAYS, [N. S.] and YEARS, of the ROYAL FAMILY of GREAT BRITAIN.

KING GEORGE III.	June 4, 1738	Prince Adolph. Fred.	Feb. 24,
Prince of Wales,	August 12, 1762	Princess Mary,	April 25, -
Prince Frederick,	August 16, 1763	Princess Sophia,	Nov. 3, - -
Prince William Henry,	Aug. 21, 1765	Princess Amelia,	Aug. 7, -
Prs. Charl. Aug. Mat.	Sept. 29, 1766	Queen Charlotte,	May 19, - -
Prince Edward,	Nov. 2, - - 1767	Prs. Amelia,	June 10, - -
Prs. Augusta Sophia,	Nov. 8, - 1768	Prs. Augusta of Brunsw.	Aug. 11,
Prs. Elizabeth,	May 22, - - 1770	Duke of Gloucester,	Nov. 25,
Prince Ernest Augustus,	June 5, 1771	Duke of Cumberland,	Nov. 7,
Prince Aug. Fred.	Jan. 27, - 1773		

YEARS of BIRTHS of the Principal SOVEREIGN PRINCES of EUROPE.

Cha. Frederick, King of Prussia,	1712	Maria, Queen of Portugal -	
Achmet IV. Grand Seignor -	1715	Joseph Ben. Aug. Emp. Germ.	
Charles, King of Spain, - -	1716	Gustavus, King of Sweden, -	
Pius VI. Pope - - - -	1717	William V. Stadtholder, -	
Victor Amada Maria, K. Sardinia	1726	Christian VII. K. of Denmark,	
Catherine, Empress of Russia,	1729	Ferdinand IV. King of Sicily,	
Stanislaus Aug. King of Poland	1732	Lewis XVI. King of France,	

Days	L.
1	7
6	
11	8
16	
21	
26	

Last Quarter, 3d, at 7 evening.
New Moon, 11th, 17 m. past 1 morn.
First Quarter, 17th, 12 m. past 5 even.
Full Moon, 25th, 40 m. past 8 morn.

Sun enters ♒ 19d. 1h. 22m.

1	S	Circumcision	8	4	3	56	22	s 58	10 a	30	21
2	B	Sunday aft. Circumcision		4		56		52	11	39	22
3	M			3		57		46	morn		23
4	Tu			2		58		40	0	50	24
5	W	*Old Christmas Day*		2		58		33	2	4	25
6	Th	Epiphany. Twelfth Day		1		59		25	3	23	26
7	F			0	4	0		18	4	42	27
8	S	*Lucian*	7	59		1		9	5	58	28
9	B	1 Sunday after Epiphany		58		2		1	7	5	29
10	M	*Plow Monday*		57		3	21	52	7	57	30
11	Tu			56		4		42	☾ sets		N
12	W	*Old New Year's Day*		55		5		32	6 a	9	2
13	Th	*Hilary*. Cam. Ter. beg.		54		6		22	7	40	3
14	F	Oxf. Term begins		52		8		11	9	7	4
15	S			51		9		0	10	32	5
16	B	2 Sunday after Epiphany		50		10	20	48	11	57	6
17	M			49		11		36	morn		7
18	Tu	Queen's B. day kept. *Prisca*		47		13		24	1	21	8
19	W			46		14		11	2	44	9
20	Th	*Fabian*. Hilary 1 Ret.		45		15	19	58	4	3	10
21	F	*Agnes*		43		17		45	5	13	11
22	S	*Vincent*		42		18		31	6	12	12
23	B	Septuagesima Sunday		40		20		17	6	55	13
24	M	Hilary Term begins		39		21		2	7	25	14
25	Tu	Conversion of St. Paul		37		23	18	47	☾ rises		F
26	W			36		24		32	5 a	50	16
27	Th	Pr. Aug. F. b. 1773. Hil. 2 R.		34		26		16	7	0	17
28	F			33		27		0	8	9	18
29	S			31		29	17	44	9	18	19
30	B	Sexages. S. K. Ch. I. mart.		29		31		28	10	28	20
31	M			28		32		11	11	40	21

Days	L. of D.	Day Inc.	D. breaks	Tw. ends	Sun East	Cl. bef. S.	7 Stars So.
1	7 52	0 8	5 59	6 1	4 41	4′ 23″	8 a 42
6	58	14	57	3	43	6 39	20
11	8 8	24	53	7	46	8 42	7 58
16	20	36	49	11	50	10 29	37
21	34	50	44	16	54	12 0	16
26	48	1 4	38	22	58	13 11	6 55

Last Quarter, 2d, 45 m. past 1 aftern.
New Moon, 9th, 25 m. past noon.
First Quarter, 16th, 24 m. past 4 morn.
Full Moon, 24th, 45 m. past 3 morn.

Sun enters ♓ 17 d. 16 h. 9 m.

M D	W D	Sundays, Holydays, &c.	Sun rises	Sun sets	Sun's decl.	☾ rises & sets	☾'s Age
1	Tu		7 26	4 34	16s 54	morn	22
2	W	Purif. or Candlemas-day	24	36	36	0 54	23
3	Th	*Blaſe*. Hilary, 3 Return	23	37	18	2 12	24
4	F		21	39	c	3 29	25
5	S	*Agatha*	19	41	15 42	4 4c	26
6	B	Quinqua. or Shrove Sun.	17	43	23	5 38	27
7	M		15	45	5	6 21	28
8	Tu	Shrove-Tueſday	14	46	14 45	6 52	29
9	W	Aſh-Wedn. Hil. 4 Ret.	12	48	26	☾ ſets	N
10	Th		10	50	7	6 a 31	2
11	F		8	52	13 47	8 3	3
12	S	Hilary Term ends	6	54	27	9 31	4
13	B	Quadr. or 1 S. in Lent	4	56	6	10 59	5
14	M	*Valentine* [*O. Candl.-day*	3	57	12 46	morn	6
15	Tu		1	59	25	0 26	7
16	W	Ember Week	6 59	5 1	4	1 48	8
17	Th		57	3	11 43	3 4	9
18	F		55	5	22	4 6	10
19	S		53	7	1	4 52	11
20	B	2 Sunday in Lent	51	9	10 39	5 27	12
21	M		49	11	17	5 53	13
22	Tu		47	13	9 56	6 12	14
23	W		45	15	34	6 26	15
24	Th	St. Matthias. Pr. Ad. Fr. b.	43	17	11	☾ riſes	F
25	F	[1774	41	19	8 49	7 a 8	17
26	S		39	21	27	8 7	18
27	B	3 Sunday in Lent	38	22	4	9 28	19
28	M		36	24	7 41	10 42	20

Days	L. of D.	Day Inc.	D. breaks	Tw. ends	Sun East	Cl. bef. S.	7 Stars So.
1	9 8	1 24	5 30	6 30	5 4	14′ 10″	6 a 31
6	26	42	22	38	9	36	10
11	44	2 0	14	46	15	41	5 50
16	10 2	18	6	55	21	27	31
21	22	38	4 57	7 4	27	13 56	12
26	42	58	48	13	33	10	4 53

Last Quarter, 4th, 57 m. past 4 morn.
New Moon, 10th, 33 m. past 10 night.
First Quarter, 17th, 1 m. past 6 even.
Full Moon, 25th, 8 m. past 10 night.

Sun enters ♈ 19 d. 16 h. 32 m.

1	Tu	*David*	6	34	5	26	7	s 18	11 a 58	21
2	W	*Chad*		32		28	6	56	morn	22
3	Th			30		30		33	1 14	23
4	F			28		32		9	2 26	24
5	S			26		34	5	46	3 29	25
6	B	4th, or Midlent Sunday		24		36		23	4 17	26
7	M	*Perpetua*		22		38		0	4 52	27
8	Tu			20		40	4	36	5 22	28
9	W			18		42		13	5 38	29
10	Th			16		44	3	49	☾ sets	N
11	F			14		46		26	7 a 1	1
12	S	*Gregory*		12		48		2	8 32	2
13	B	5 Sunday in Lent		10		50	2	38	10 3	3
14	M			8		52		15	11 31	4
15	Tu			6		54	1	51	morn	5
16	W			4		56		27	0 53	6
17	Th	*St. Patrick*		2		58		4	2 3	7
18	F	*Edw. K. W. S.* Camb. T.		0	6	0	0	40	2 57	8
19	S	Orf. T. ends. [ends	5	58		2		16	3 35	9
20	B	6 S. in Lent. Palm Sunday		56		4	0 n	7	4 4	10
21	M	*Benedict*		54		6		31	4 24	11
22	Tu			52		8		55	4 40	12
23	W			50		10	1	18	4 53	13
24	Th	*Maundy Thursday*		48		12		42	5 6	14
25	F	Good-Fr. Annun. or Lady [Day		46		14	2	5	☾ rises	F
26	S			44		16		29	7 a 25	16
27	B	Easter-Day		42		18		52	8 39	17
28	M	Easter-Monday		40		20	3	16	9 53	18
29	Tu	Easter-Tuesday		38		22		39	11 19	19
30	W			36		24	4	2	morn	20
31	Th			34		26		26	0 22	21

Days	L. of D.	Day Inc.	D. breaks	Tw. ends	Sun East	Cl. bef. S.	7 Stars S.
1	10 52	3 8	4 43	7 18	5 37	12′ 35″	4 a 42
6	11 12	28	32	29	43	11 27	24
11	32	48	21	40	49	10 8	6
16	52	4 8	11	50	55	8 43	3 47
21	12 12	28	0	8 1	6 2	7 12	29
26	32	48	3 48	12	8	5 39	11

Last Quarter, 2d, 23 m. past 4 aftern.
New Moon, 9th, 45 m. past 7 morn.
First Quarter, 16th, 48 m. past 9 morn.
Full Moon, 24th, 12 m. past 2 aftern.

Sun enters ♉ 19 d. 5 h. 16 m

1	F		5 32	6 28	4 n 49	1 m 28	22
2	S		30	30	5 12	2 19	23
3	B	Low Sunday. *Richard*	28	32	35	2 58	24
4	M	*St. Ambroſe*	26	34	57	3 26	25
5	Tu		24	36	6 20	3 47	26
6	W	Orf. and Cam. T. begin	22	38	43	4 4	27
7	Th		20	40	7 5	4 20	28
8	F		18	42	28	4 36	29
9	S		17	43	50	☾ ſets	N
10	B	2 Sunday after Eaſter	15	45	8 12	8 a 59	2
11	M	Eaſter T. 1 Return	13	47	34	10 34	3
12	Tu		11	49	56	11 51	4
13	W	Eaſter Term begins	9	51	9 18	morn	5
14	Th		7	53	39	0 55	6
15	F		5	55	10 1	1 40	7
16	S		3	57	22	2 13	8
17	B	3 Sunday after Eaſter	1	59	43	2 35	9
18	M	Eaſter T. 2 Return	4 59	7 1	11 4	2 53	10
19	Tu	*Alphege*	57	3	25	3 9	11
20	W		56	4	45	3 20	12
21	Th		54	6	12 5	3 32	13
22	F		52	8	26	3 43	14
23	S	St. George	50	10	46	3 56	15
24	B	4 Sunday after Eaſter	48	12	13 5	☾ riſes	F
25	M	St. Mark. Prs. Mary bo.	46	14	25	9 a 2	17
26	Tu	[1776 Ea. 3 R.	45	15	44	10 19	18
27	W		43	17	14 3	11 26	19
28	Th		41	19	22	morn	20
29	F		39	21	40	0 23	21
30	S		37	23	59	1 5	22

Days	L. of D.	Day Inc.	D. breaks	Tw. ends	Sun East	Cl. bef. S.	7 Stars So
1	12 56	5 12	3 33	8 28	6 15	3′ 48″	2 a 49
6	13 16	32	20	41	21	2 18	31
11	34	50	6	55	27	0 53	12
16	54	6 10	2 54	9 7	33	0 a 24	1 54
21	14 12	28	40	21	39	1 31	35
26	30	46	23	38	45	2 27	16

Last Quarter, 1st, 28 m. past 12 night.
New Moon, 8th, 31 m. past 4 aftern.
First Quarter, 16th, 1 m. past 3 morn.
Full Moon, 24th, 28 m. past 3 morn.
Last Quarter, 31st, 3 m. past 6 morn.

Sun enters ♊ 20 d. 5 h. 52 m.

1	B	Rogat. S. St. Phil. & James	4	36	7	24	15	n17	1 m	35	23
2	M	Easter T. 4 Return		34		26		35	1	57	24
3	Tu	*Invention of the Cross*		32		28		52	2	1	25
4	W			31		29	16	10	2	32	26
5	Th	Ascension-day. Holy-Th.		29		31		27	2	48	27
6	F	Easter, 5 Ret. *John a. P.L.*		27		33		44	3	2	28
7	S			25		35	17	0	3	19	29
8	B	Sunday after Ascension		24		36		16	☾ sets		N
9	M	Easter Term ends		22		38		32	9 a	29	1
10	Tu			21		39		48	10	41	2
11	W			19		41	18	3	11	34	3
12	Th	℣ſſ. Term ends		18		42		18	morn		4
13	F			16		44		33	0	13	5
14	S			14		46		48	0	39	6
15	B	Whit-Sunday		13		47	19	2	1	1	7
16	M	Whit-Monday		12		48		16	1	17	8
17	Tu	Whit-Tuesday		10		50		29	1	31	9
18	W	Ember Week		9		51		42	1	41	10
19	Th	Q. Charl. b 1744. *Dunstan.*		7		53		55	1	52	11
20	F			6		54	20	8	2	4	12
21	S			5		55		20	2	17	13
22	B	Trin. S. Prs. Eliz. b. 1770		3		57		31	2	34	14
23	M	Trinity T. 1 Return		2		58		43	2	56	15
24	Tu			1		59		54	☾ rises		F
25	W	℣ſſ. Term begins		0	8	0	21	5	10 a	18	17
26	Th	*Augustin. Corpus Christi*	3	58		2		15	11	4	18
27	F	*Ven. Bede.* Trin. T. begins		57		3		25	11	37	19
28	S			56		4		35	morn		20
29	B	1 S. aft. Tr. K. Ch. II. Rest.		55		5		44	0	2	21
30	M	Trin. T. 2 Return [1660		54		6		53	0	21	22
31	Tu			53			22	1	0	36	23

Days	L. of D.	Day Inc.	D. breaks	Tw. ends	Sun East	Cl[illegible] S.	7 Stars So.
1	14 48	7 4	2 4	9 58	6 50	3′ 11″	0 a 57
6	15 6	22	1 50	10 12	55	42	38
11	22	38	28	34	7 0	58	19
16	36	54	4	59	4	4 0	11 m 59
21	50	8 8	0 24	11 41	8	3 48	40
26	16 4	22	No real Night.		12	21	20

New Moon, 7th, 44 m. past 1 morn.
First Quarter, 14th, 34 m. past 8 even.
Full Moon, 22d, 17 m. past 2 aftern.
Last Quarter, 29th, 27 m. past 10 morn.

Sun enters ♋ 20d. 14h. 37m.

1	W	*Nicomede*	3 52	8 8	22 n 9	0 m 51	24
2	Th		51	9	17	1 5	25
3	F		51	9	25	1 20	26
4	S	K. Geo. III. born, 1738	50	10	32	1 39	27
5	B	2 S. aft. Tr. Pr. Er. A. b. 1771.	49	11	38	2 7	28
6	M	Trin. T. 3 Ret. [*Boniface*	48	12	44	2 39	29
7	Tu		48	12	50	☾ sets	N
8	W		47	13	55	10 a 6	2
9	Th		46	14	23 0	10 38	3
10	F	Prs. Amelia born, 1711	46	14	5	11 1	4
11	S	St. Barnabas	45	15	9	11 17	5
12	B	3 Sunday after Trinity	45	15	13	11 32	6
13	M	Trinity, 4 Return	44	16	16	11 43	7
14	Tu		44	16	19	11 54	8
15	W	Trinity Term ends	44	16	22	morn	9
16	Th		43	17	24	0 5	10
17	F	*St. Alban*	43	17	25	0 18	11
18	S				27	0 33	12
19	B	4 Sunday after Trinity			28	0 52	13
20	M	*Transf. Edw. K. W. S.*			28	1 19	14
21	Tu	Longest Day			28	1 56	15
22	W				28	☾ rises	F
23	Th				27	9 a 33	17
24	F	Nativ. of St. John Baptist			26	10 1	18
25	S		43	17	24	10 22	19
26	B	5 Sunday after Trinity	44	16	22	10 38	20
27	M		44	16	20	10 53	21
28	Tu		44	16	17	11 7	22
29	W	St. Peter	45	15	14	11 22	23
30	Th		45	15	10	11 40	24

Longest Day, at Lond. is 16 h. 34 m. 4 sec. allowing 9 m. 16 sec. for refraction.

Days	L. of D.	Day Inc.	D. breaks	Tw. ends	Sun East	Cl. aft. S.	7 Stars So.
1	16 16	8 34	No night, but constant day or twilight.		7 16	2′ 35″	10 m 55
6	24	52			18	1 45	35
11	30	9 8			19	0 49	15
16	34	22			20	0 b 14	9 56
21	34	22			21	1 19	33
26	32	dec. 2			20	2 23	17

New Moon, 6th, 28 m. past noon.
First Quarter, 14th, 34 m. past 1 aftern.
Full Moon, 21st, 26 m. past 11 night.
Last Quarter, 28th, 17 m. past 3 aftern.

Sun enters ♌ 22 d. 1 h. 31 m.

1	F		3 46	8 14	23 n 6	morn		25
2	S	*Visitation of the V. Mary*	46	14	1	0 3		26
3	B	6 S. aft. Tr. Dog Days beg.	47	13	22 57	0 32		27
4	M	*Translation of St. Martin*	47	13	50	1 11		28
5	Tu	Cam. Commencement	48	12	46	2 5		29
6	W		49	11	40	☾ sets		N
7	Th	*Thomas a Becket*	49	11	33	9 a 0		2
8	F	Cam. Term ends	50	10	26	9 18		3
9	S		51	9	19	9 33		4
10	B	7 Sunday after Trinity	52	8	11	9 46		5
11	M	Oxford Act	53	7	3	9 57		6
12	Tu		54	6	21 55	10 8		7
13	W		55	5	46	10 20		8
14	Th		56	4	37	10 32		9
15	F	*Swithin*	57	3	28	10 50		10
16	S	Oxf. Term ends	58	2	18	11 12		11
17	B	8 Sunday after Trinity	59	1	8	11 44		12
18	M		4 0	0	20 57	morn		13
19	Tu		2	7 58	46	0 29		14
20	W	*Margaret*	3	57	35	1 32		15
21	Th		4	56	23	☾ rises		F
22	F	*Mary Magdalen*	5	55	11	8 a 21		17
23	S		7	53	19 59	8 40		18
24	B	9 Sunday after Trinity	8	52	46	8 57		19
25	M	St. James	10	50	33	9 11		20
26	Tu	*St. Anne*	11	49	20	9 26		21
27	W		12	48	6	9 43		22
28	Th		14	46	18 53	10 3		23
29	F		15	45	38	10 31		24
30	S		17	43	24	11 7		25
31	B	10 Sunday after Trinity	18	42	9	11 57		26

Days	L. of D.	Day dec.	D. breaks	Tw. ends	Sun East	Cl. bef. S.	7 Stars So.
1	16 28	0 6			7 19	3′ 23″	8 m 52
6	22	12			18	4 17	32
11	14	20			15	5 1	11
16	4	30	No real Night.		12	34	7 51
21	15 52	42			9	56	31
26	38	56	0 52	11 4	5	6 3	11

New Moon, 5th, 32 m. paſt 1 morn.
Firſt Quarter, 13th, 30 m. paſt 5 morn.
Full Moon, 19th, 47 m. paſt 7 morn.
Laſt Quarter, 26th, 9 m. paſt 10 night.

Sun enters ♍ 22 d. 7 h. 52 m.

1	M	Lammas	4	20	7	40	17 n 54	morn	27
2	Tu			22		38	38	0 56	28
3	W			23		37	23	2 10	29
4	Th			25		35	7	3 25	30
5	F			26		34	16 50	☾ ſets	N
6	S	*Tranſfiguration*		28		32	34	7 a 52	2
7	B	11 S. aft. Tr. Prs. Amelia b.		30		30	17	8 5	3
8	M	[1783		31		29	0	8 15	4
9	Tu			33		27	15 42	8 26	5
10	W	*St. Lawrence* [Days end		35		25	25	8 38	6
11	Th	Prs. Brunſw. b. 1737. Dog		37		23	7	8 55	7
12	F	Pr. of Wales born, 1762		38		22	14 49	9 15	8
13	S	[*O. Lam.-day*		40		20	31	9 42	9
14	B	12 Sunday after Trinity		42		18	12	10 21	10
15	M	*Aſſumption-day*		44		16	13 53	11 14	11
16	Tu	Pr. Fred. born 1763		45		15	34	morn	12
17	W			47		13	15	0 22	13
18	Th			49		11	12 56	1 46	14
19	F			51		9	36	☾ riſes	15
20	S			53		7	16	7 a 4	F.
21	B	13 S. aft. Tr. Pr. W. H. bo.		54		6	11 56	7 20	17
22	M	[1765		56		4	36	7 36	18
23	Tu			58		2	15	7 52	19
24	W	St. Bartholomew	5	0		0	10 55	8 13	20
25	Th			2	6	58	34	8 40	21
26	F			4		56	13	9 12	22
27	S			6		54	9 52	9 58	23
28	B	14 S. aft. Tr. *St. Auguſtine*		8		52	31	10 56	24
29	M	*Beheading of John Baptiſt*		9		51	9	morn	25
30	Tu			11		49	8 48	0 5	26
31	W			13		47	26	1 18	27

Da	L. of D.	Day dec.	D. breaks	Tw. ends	Sun Eaſt	Cl. bef. S.	7 Stars Sa
1	15 20	1 14	1 24	10 34	7 0	5′ 53″	6 m 47
6	4	30	44	14	6 55	24	28
11	14 46	48	2 2	9 56	50	4 43	9
16	30	2 4	20	39	44	3 49	5 50
21	12	22	35	24	39	2 42	31
26	13 52	42	50	9	33	1 23	13

New Moon, 3d, 57 m. past 4 aftern.
First Quarter, 11th, 1 m. past 8 even.
Full Moon, 18th, 3 m. past 4 aftern.
Last Quarter, 25th, 27 m. past 8 morn.

Sun enters ♎ 22d. 4 h. 18 m.

1	Th	*Giles*	5 15	6 45	8 n 4	2 m 34	28
2	F	London burnt, 1666	17	43	7 42	3 48	29
3	S		19	41	20	☾ sets	N
4	B	15 Sunday after Trinity	21	39	6 58	6 a 31	2
5	M		23	37	36	6 44	3
6	Tu		25	35	13	6 57	4
7	W	*Enurchus*	27	33	5 51	7 10	5
8	Th	*Nativity of the V. Mary*	29	31	28	7 28	6
9	F		31	29	5	7 51	7
10	S		32	28	4 43	8 24	8
11	B	16 Sunday after Trinity	34	26	20	9 9	9
12	M		36	24	3 57	10 11	10
13	Tu		38	22	34	11 27	11
14	W	*Holy-Cross*	40	20	11	morn	12
15	Th		42	18	2 47	0 51	13
16	F		44	16	24	2 2	14
17	S	*Lambert*	46	14	1	3 53	15
18	B	17 Sunday after Trinity	48	12	1 38	☾ rises	F
19	M		50	10	14	6 a 6	17
20	Tu		52	8	0 51	6 24	18
21	W	St. Matthew. Ember Week	54	6	28	6 48	19
22	Th	K. Geo. III. crowned, 1761	56	4	4	7 19	20
23	F		58	2	0 s 19	8 2	21
24	S		6 0	0	43	8 59	22
25	B	18 Sunday after Trinity	2	5 58	1 6	10 7	23
26	M	*St. Cyprian*	4	56	30	11 20	24
27	Tu		6	54	53	morn	25
28	W		8	52	2 16	0 34	26
29	Th	St. Michael. Prs. Ch. Aug.	10	50	40	1 46	27
30	F	*St. Jerome* [Mat. b. 1766	12	48	3 3	2 58	28

Days	L. or D.		Day dec.		D. breaks		Tw. ends		Sun East		Cl. aft. S		7 Stars So	
1	13	30	3	4	3	7	8	52	6	20	0′	24″	4 m	51
6		10		24		21		38		20	2	2		33
11	12	52		42		34		25		14	3	44		15
16		32	4	2		45		14		8	5	28	3	57
21		12		22		56		3		2	7	12		40
26	11	52		42	4	7	7	52	5	55	8	54		20

New Moon, 3d, 1 m. past 10 morn.
First Quarter, 11th, 52 m. past 8 morn.
Full Moon, 17th, 52 m. past 12 night.
Last Quarter, 24th, 52 m. past 10 night.

Sun enters ♏ 22 d. 12 h. 13 m

1	S	*Remigius*	6	14	5	46	3s	21	4 m	9
2	B	19 Sunday after Trinity		16		44		50	5	18
3	M			18		42	4	13	☾ sets	
4	Tu			20		40		36	5 a	28
5	W			22		38	5	0	5	45
6	Th	*Faith*		24		36		23	6	5
7	F			26		34		46	6	36
8	S			28		32	6	9	7	16
9	B	20 S. aft. Trin. *St. Denys*		29		31		31	8	11
10	M	Oxf. and Cam. T. beg.		31		29		54	9	19
11	Tu			33		27	7	17	10	37
12	W			35		25		40	morn	
13	Th	*Transf. of K. Edw. Conf.*		37		23	8	2	0	1
14	F			39		21		24	1	29
15	S			41		19		41	2	56
16	B	21 Sunday after Trinity		43		17	9	9	4	26
17	M	*Etheldred*		45		15		31	5	57
18	Tu	St. Luke		47		13		53	☾ rises	
19	W			49		11	10	14	5 a	23
20	Th			51		9		36	6	4
21	F			53		7		57	6	54
22	S			55		5	11	18	8	0
23	B	22 Sunday after Trinity		56		4		39	9	11
24	M			58		2	12	0	10	26
25	Tu	K. G. III. Ac. 1760. *Crisp.*	7	0		0		21	11	44
26	W	K. Geo. III. Proc 1760		2	4	58		42	morn	
27	Th			4		56	13	2	0	54
28	F	St. Simon and Jude		6		54		22	2	5
29	S			8		52		42	3	12
30	B	23 Sunday after Trinity		9		51	14	2	4	22
31	M			11		49		21	5	31

Days	L. of D.	Day dec.	D. breaks	Tw. ends	Sun East	Cl. aft. S.	7 Stars S.
1	11 32	5 2	4 18	7 41	5 49	10′ 32″	3 m 4
6	12	22	29	30	43	12 2	2 46
11	10 54	40	39	20	37	13 22	27
16	34	6 0	49	10	31	14 28	8
21	14	20	59	0	25	15 20	1 50
26	9 56	38	5 8	6 51	19	15 56	29

New Moon, 2d, 39 m. paſt 3 morn.
Firſt Quarter, 9th, 49 m. paſt 7 even.
Full Moon, 16th, 50 m. paſt 10 morn.
Laſt Quarter, 23d, 12 m. paſt 5 aftern.

Sun enters ♐ 21 d. 8 h. 25 m.

Tu	All Saints	7 13	4 47	14 s 40	6 m 41	30
W	Pr. Edw. b. 1767. *All Souls*	15	45	59	☾ ſets	N
Th	Prs. Soph. b. 1777. Mich.	17	43	15 18	4 a 43	2
F	[1 Ret.	18	42	37	5 20	3
S	Powder Plot, 1605	20	40	55	6 11	4
B	24 S. aft. Trin. *Leonard*	22	38	16 13	7 14	5
M	D. Cum. b. 1745 Mich. T.	24	36	31	8 29	6
Tu	Prs. Au. Sop. b. 1768. [beg.	25	35	48	9 48	7
W	Ld. Mayor's Day at Lond.	27	33	17 5	11 11	8
Th		29	31	22	morn	9
F	*St. Martin*	30	30	38	0 35	10
S	Mich. Term, 2 Return	32	28	55	1 59	11
B	25 S. aft. Trin. *Britius*	33	27	18 11	3 25	12
M		35	25	26	4 52	13
Tu	*Machutus*	37	23	42	6 25	14
W		38	22	56	☾ riſes	F
Th	*Hugh*	40	20	19 11	4 a 38	16
F	Mich. Term, 3 Return	41	19	25	5 37	17
S		42	18	39	6 49	18
B	26 S. aft. Tr. *Edm. K. & M.*	44	16	53	8 9	19
M		45	15	20 6	9 23	20
Tu	*Cecilia. Old Mart.-day*	47	13	19	10 38	21
W	*St. Clement*	48	12	31	11 48	22
Th		49	11	43	morn	23
F	D. Gloſ. b. 1743. *Catharine*	51	9	55	0 58	24
S	[Mich. T. 4 Ret.	52	8	21 6	2 7	25
B	Advent Sunday	53	7	17	3 15	26
M	Mich. Term ends	54	6	28	4 27	27
Tu		55	5	38	5 37	28
W	St. Andrew	56	4	47	6 48	29

Days	D.	Day dec.	D. breaks	Tw. ends	Sun East	Cl. aft. S.	7 Stars So
1	9 34	7 0	5 17	6 42	5 12	16′ 14″	1 m 4
6	16	18	24	35	7	8	0 44
11	0	34	32	28	1	15 40	24
16	8 44	50	37	23	4 57	14 51	3
21	30	8 4	43	17	52	13 40	11 a 42
26	16	18	49	11	49	12 11	21

New Moon, 1st, 48 m. past 8 night.
First Quarter, 9th, 52 m. past 4 morn.
Full Moon, 15th, 36 m. past 10 night.
Last Quarter, 23d, 7 m. past 2 aftern.
New Moon, 31st, 39 m. past 12 noon.

Sun enters ♑ 20 d. 20 h. 47 m.

1	Th		7	57	4	3	21	s 57	☾ sets		N
2	F			58		2	22	6	4	a 0	1
3	S			59		1		14	4	57	2
4	B	2 Sunday in Advent	8	0		c		22	6	12	3
5	M			1	3	59		29	7	31	4
6	Tu	*Nicholas*		2		58		37	8	53	5
7	W			3		57		43	10	14	6
8	Th	*Conception of V. Mary*		3		57		49	11	3	7
9	F			4		56		55	morn		8
10	S			5		55	23	c	0	58	9
11	B	3 Sunday in Advent		5		55		5	2	22	10
12	M			6		54		10	3	48	11
13	Tu	*Lucy*		6		54		14	5	16	12
14	W	Ember Week		7		53		17	6	41	13
15	Th			7		53		20	☾ rises		F
16	F	**Cam. Term ends**		7		53		23	4	a 14	15
17	S	**Orf. Term ends**		8		52		25	5	30	16
18	B	4 Sunday in Advent	Shortest D. at Lond. is 7h. 44m. 17s. allowing 9m. 5s. for refraction.					26	6	49	17
19	M							27	8	6	18
20	Tu							28	9	20	19
21	W	St. Thomas. **Shortest Day**						28	10	31	20
22	Th							28	11	39	21
23	F							27	morn		22
24	S			8		52		26	0	47	23
25	B	Christmas Day.		7		53		24	1	57	24
26	M	St. Stephen.		7		53		22	3	7	25
27	Tu	St. John		7		53		19	4	18	26
28	W	Innocents		6		54		16	5	30	27
29	Th			6		54		13	6	3[illegible]	28
30	F			6		54		8	7	34	29
31	S	*Silvester*		5		55		4	☾ sets		N

Days	L. of D.		Day dec.	D. breaks		Tw. ends		Sun East		Cl. arr. S.		7 Stars So
1	8	6	8 28	5	54	6	6	4	45	10′	23″	11 a 0
6	7	56	38		56		4		43	8	20	10 38
11		50	44		58		2		41	6	5	16
16		46	48	6	0		0		40	3	39	9 54
21		44	50		1	5	59		39	1	9	32
26		46	Dinc. 2		0	6	0		40	1 b	21	10

Chronological Notes, &c. in 1785.

Dominical Letter	B	Shrove Sunday	Feb. 6.
Golden Number	19	Eaſter Day	Mar. 27.
Epact	18	Whit-Sunday	May 15.
Cycle of the Sun	2	Trinity-Sunday	May 22.
Roman Indiction	3	Advent-Sunday	Nov. 27.

Eclipses, &c.

THERE will happen only two eclipſes in the courſe of this year, both of the ſun, and both inviſible in this country.—I. The firſt is on the 9th of February, at 25 minutes paſt noon; but inviſible here, on account of the moon's parallax.—II. The ſecond is on the 5th of Auguſt, at half paſt one in the morning, and conſequently inviſible here.

Venus is an evening ſtar till May 30; and then a morning ſtar to the end.
Jupiter is an evening ſtar till March 10; then a morning ſtar till Oct. 2; and then an evening ſtar for the reſt of the year.

Answers to the Enigmas.

1. Oak.	4. Tooth-bruſh.	7. Umbrella.	10. Sigh.
2. Diſhclout.	5. Bread.	8. Flint and Steel, or	11. Joke.
3. Window-blind.	6. Valentine.	9. Ace. [Gun-lock.	12, or *Pr.* Fan.

The Prize Enigma anſwered by Mr. R. Richardſon, of Froſterly.—To Laura.

When La Mancha's fam'd knight bad his Sancho go ramble,
While he, hapleſs wight! pranc'd o'er rock, buſh, and bramble;
His peerleſs enchantreſs, the bright dulcinea,
Exiſted, they tell us, alone in idea;
And howe'er the fond knight in his madneſs might caper,
But courted a ſhadow, and ſigh'd for a vapour.
So you, my veil'd fair one, my Laura unknown,
Have inſpir'd my poor heart that was colder than ſtone,
With a paſſion ſo ardent, ſo wild a diſtreſs,
That language were uſeleſs its force to expreſs;
And the fancied perfections I ſo much adore,
Shall *fan* the dear flame for a twelvemonth and more:
So, matters thus ſtated, you've nothing to do,
But in propria perſona yourſelf to avow.

The ſame by Miſs Sally Goldfinch, of Lancaſter.

One ſummer's day, fatigu'd with heat,
Young Damon with his Cloe ſat,
Abſorb'd in thought profound:
For, ah! a curious vow ſhe'd made,
"His love ſhould never be repaid
Till he one prize had found."

Furling her *Fan*, with cold diſdain
She threw it at his feet; the ſwain
Quick ſeiz'd it in ſurprize.
But, ah! how was he overjoy'd,
When lovely Cloe ſmiling cry'd,
"My dear, you've won the prize."

The

The ſame by Eccleſiæ.

To a young lady who behaved ill at church.

Think not your *Fan* will ſcreen you from his ſight,
Who is himſelf the glorious fount of light;
But be more ſerious in the houſe of pray'r,
For the great God—your princely judge is there.

The ſame by Mr. M. Applin.—*Addreſs'd to Miſs R.*

'Tis wiſely done, moſt lovely maid!
Such dazzling charms require a ſhade;
Your *Fan* permits me now to gaze,
And thro' the ſticks view beauty's rays,
So Phebus thro' a cloud we ſpy,
Whoſe open blaze would dim the eye.

The Pr. Enig. anſwered by Mr. Alex. Rowe, of Reginnis.

"While o'er the cheek a pallid hue is ſpread,
The ſpirits droop, and active life is fled;
Fan's pleaſing efforts quickly interpoſe,
And oft reſtore Hygeia's blooming roſe;
While" vivid zephyrs on your boſoms play,
Pant on your lips, and ſigh themſelves away.

The ſame anſwered by Lavinia.

All virtues has my love but one:
Ladies, tell me, teach me, do,
How to fix my wand'ring man,
How to make my Damon true;
How in his heart to *fan* the fire
That alone can bring content;
How to calm each wild deſire,
How to mine his heart cement.

The ſame by Mrs. B. of Saliſbury.

We're requeſted to anſwer as ſhort as we can,
So will only pronounce, that the prize is a *Fan*.

Mr. Tho. Jackſon's Addreſs to Eliza's *Fan*.

Thou "little, fooliſh, flutt'ring thing,"
What ſtrange emotions thro' thee ſpring
Within my raviſh'd breaſt!
As fair Eliza's kind or coy,
Thy motion gives me grief or joy,
Too great to be expreſt.

Mr. T. Woolſton's Addreſs to the Author of the Pr. Enig.

Dear Sir, in pleaſing trifles you excel,
As well your ſoft harmonious numbers tell:
But here we only view the fainter beams
With which your genius gilds your ſportive themes.
Call forth each latent ſpark, give Albion's plains
To echo ſweet your more exalted ſtrains.
Check not the muſe, but *fan* the riſing flame,
And nobly challenge an immortal name.

The Anſwer, by Hilarius.

The *Fan* the beauteous Delia wields
With ſuch reſiſtleſs art,
Each ſtubborn youth that moment
His captivated heart. [yields

The ſame by Miſs Charlotte S——t.

My painted *Fan* expreſſes joy and grief;
In fainting fits it often gives relief.
When ſaucy men around me nonſenſe prate,
It hides the bluſh that nonſenſe muſt create.

The PRIZE ENIGMA anſwered by Philadelphia, *of Malton.*

Behold a vot'reſs of platonic love,
Whoſe mental powers the force of friendſhip prove,
Begs leave to offer to each Britiſh fair
Her kind advice, and ſentiments ſincere. ——
If by ſome lovely youth you are addreſs'd;
And feel a partial fondneſs in your breaſt;
Suppreſs the flame, till truth and reaſon prove
His mind alone is worthy of your love:
When that's adorn'd with piety and peace,
The card'nal virtues join'd with ev'ry grace;
Then may you *fan* the pure ſeraphic flame.
Nor fear inconſtancy, or grief, or ſhame.
Then will your bliſs admit of no alloy,
Nor time nor accident your peace deſtroy;
E'n death itſelf will a ſure paſport prove,
To waft your ſoul to realms of endleſs love.

The ſame by Miſs Diana Browne, *of Honiton.*

"Grown bold with favours," grant me if you can,
"A vacant niche" to ſpread my darling *fan.*

With much regret we are obliged to omit the other ingenious and ſeparate anſwers that were given by Meſſrs. Ambroſe, Anderſon, Antonietta, Bayley, Bearcroft, Burr, Miſs F. C. of North Shields, Maria Careleſs, Chimes, Cleypole, Crowle, Dening, Doubleday, Fairbank, Miſs A. Finch, Fletcher, Frankly, Jackſon, Knowles, Laconicus, Lavinia, Lee, Lilliputian, Lodge, Clariſſa Maitland, Matthews, Miſs M. Milnthorp, Neeſom, Nield, Nimrod, Orford, Pidgley, Rebſur, Ruſher, Smith, Stafford, Stella, Swift, Sylvia, A. T, Tacitus, Terrill, Tomlinſon, Creſwell, Mrs. E. W, Kit Went, Whitton, Williams, and others.

All the ENIGMAS anſwered by the Rev. Tho. Baker.

— *On Spring.*

Winter farewell!—Ye melancholy train
Of piercing blaſts,—dark nights and drowning rain;
Ye ſweeping floods;—ye frozen beds of ſnow;
Ye icy chains that bind the mountain's brow;
Ye ſtorms tempeſtuous, whoſe tremend'ous ſtroke
Shakes the proud tow'rs, and bends the ſtubborn *oak:* 1
Adieu:—for now the lovely ſpring appears,
And birds harmonious charm the trav'ller's ears;
Etherial mildneſs unmoleſted reigns,
And ſoft'ring breezes whiſper round the plains.
Now fall the ſoft'ning dews, the vernal ſhow'rs,
And ſweetly ſmell the garden's blooming flowers;
Lovely the mountains ſhine;—the fertile vales
Luxur'ant wave, as zephyrs *fan* the gale. *Pr.*
Throw by the *bruſh*, and conq'ring *ace*, ye fair, 4, 9
Without *umbrellas* taſte the evening air: 7

And as you walk the gay enamell'd plain,
Pleas'd with kind *letters* from your dear lov'd ſwain, 6
Shou'd ſome *blind* hungry ſoldier paſs the ſpot, 3
Without his *fire-lock*, or reg'mental knot, 8
Relieve his wants—diſpel the heart-felt *ſigh*, 10
Nor throw the witty *joke* at poverty; 11
Let your neat cook her *diſhcloth* lay aſide, 2
And *bread* and ale with bounteous hand provide. 5
While you well-pleas'd trip o'er the verdant mead,
Or muſing walk to ſome ſequeſter'd ſhade;
Or in your garden near the woodbine bow'r,
View the grand beauties of each riſing flow'r,
Whoſe glowing colours captivate the eyes,
Regale the ſmell, and charm without diſguiſe.
These, tho' the pride of ſpring's delightful ſtore,
Which bloom to day—tomorrow are no more!
True emblem this (attend it O ye great)
Of lordly man in his ſecureſt ſtate!
Hear the prophetic voice of great renown:
"All fleſh is graſs—and like the graſs cut down";
Blooms like a flow'r, and like a flow'r muſt fade;
See him at beſt—a ſhadow of a ſhade"!
To day exalted to the lofty ſkies,
Tomorrow ſickens, withers, falls and dies.
Haſt then, for that laſt ſolemn ſcene prepare,
Ye, who fair candidates for glory are:
That your now charming well-proportion'd clay,
At the glad morn of reſurrection, may
Spring from your duſty beds, beneath the tomb,
To riſe and flouriſh in immortal bloom.

A general Anſwer to the Enigmas by Eugenio.

How ſweet at early dawn to rove,
When vernal zephyrs *fan* the grove,
And from the *oak* and beechen ſpray,
A 1000 ſongſters chaunt their lay!
But, in the winter, let me feel
The bright effects of *flint and ſteel*:
Then let my fire, with chearful blaze,
Supply the loſs of Phebus rays;
And while its warmth is felt around,
Let merry *jeſts* or *tales* abound.
Nor let the all-ſubduing *ace*
Be wholly baniſh'd from the place:
Nor us'd too much; for then we find
It makes us to our intereſt *blind*.
Oft, when alone, would I peruſe
The ſportive enigmatic muſe,
Where, rais'd to fame, the *diſhcloth* ſtands,
And the fair *toothbruſh* meets your hands:
The *valentine*, *umbrella* too,
Are there exhibited to view.——
Should needy wretches, at my door,
In this cold ſeaſon, bread implore,
I'd view them with compaſſion's eye,
Relieve their wants, ſuppreſs their *ſigh*.

The Invitation, by Mr. John Stafford.——To Stella.

Now ſweet ſpring adorns the year,
Cloth'd in green the *trees* appear;
Underneath yon hawthorn's *ſhade*,
Valentine and his fair maid,
Their ſoft tales of love are telling,
While, perch'd above,
Th' am'rous dove
Woos his mate ſo ſhy, ſo willing.

Come then, Stella, hither flee,
Live and happy be with me;
Let me *sigh* no more in vain,
For the nymph I wish to gain;
Come, and all my grief remove,
Ever bless me,
And caress me,
With the sweets that charm in love.
When the eastern sun appears,
Chear'd with sleep and void of cares,
We will *trace* the fruitful fields,
Taste the sweets Aurora yields,
While the sky-lark soars on high,
Sweetly singing,
And the spring, in
All its splendour we descry.
If the sun too hot should prove,
We will *shelter* in the grove,
While the birds o'er *rocks* and trees,
Fan their airy flight with ease;
And the sweet pellucid rill,
"In soft meanders
Sweetly wanders
At the foot of yonder hill."
When the dusks of eve' appear,
To my cot we will repair;
Brush'd shall each apartment be,
To receive my love and me:
Come then, Stella, make me thine;
Frown I'll never,
But be ever
Happy when I call thee mine.

Miss Maria G. thus answers them.

No more, O Vaga, on thy banks I stray;
No more thy varied beauties I explore;
My last adieu the winds have borne away,
Nor will thy echo e'er repeat it more.
There oft beneath yon tall *umbrageous oaks*, 7, 1
Whose lofty heads, to shade the walk, entwine;
Calm have we stray'd, and pass'd some harmless *jokes*, 11
When Damon chanc'd to be my *Valentine*. 6
There liv'd the man, unenvi'd by the great,
Who dealt forth bounty at his lib'ral door;
With him fair charity had fix'd her seat;
He *fed the hungry*, and he *cloath*'d the poor. 5, 2
Oh! *blind* to every tender social joy, 3
Whose narrow souls are lock'd in self alone, 8
Who still unmov'd can hear the widow's *sigh*, 10
And weeping orphans' melancholy moan.
Not such the man whom Pope has deign'd to sing;
He sought affliction in its deep recess,
The wretch who came his tale of woe to bring,
He'd ne'er *discard* without a kind redress. 9
His fame the swains in memory oft review, 12
And shew the *fane* his bounty has repair'd, 4
When o'er the lawn they *brush* the morning dew,
They spy some relick which his hand had rear'd.

The Days of Yore; a Song by my Grandfather.

1. When I was in my prime,
Since which 'tis threescore year,
How different was the time,
How different was our cheer;
With hospitality
Each guest was welcom'd then,
And without form, or flattery,
Was bid to come again.
2. The tradesman did not think
To ape the noble lord;
No wine he then did drink,
No silver grac'd his *board*;

But pudding, beef, and ale,
A plain and wholeſome fare,
With *joke* and merry tale,
Were then thought dainties rare.

3. In comely ruſſet clad,
The honeſt farmer went,
And times were ne'er ſo bad,
But he could pay his rent;
Gin, brandy, rum, and tea,
Were in our land unknown,
Contented then were we
To live upon our own.

4. Our ladies in thoſe days
No *kickſhaw toys* deviſ'd;
Who thought to merit praiſe
All wanton arts deſpis'd:
They borrow'd not their *face*,
They borrow'd not their hair,
'Twas all a native grace
That made them look ſo fair.

5. Good wives and maidens then
A plain brown camblet wore,
And worthy gentlemen
Of broadcloth ſet great ſtore:
'Twas then a comely *ſight*
A good *brown loaf* to ſee,
And all men took delight
In deeds of charitie.

6. At *Valentine* or Eaſter
A merry day we ſpent,
And for a ſingle teaſter
Could purchaſe much content;
On Chriſtmas holie eve,
We rung a merry peal;
And then we had good leave
To drink like hearts of *ſteel*.

7. *Blind* ſuperſtition's rites
We valued not at all,
But ſpent our jovial nights
With Margery, Joan and Moll;
Good chear did then abound,
With ſtore of nappy ale,
And we kiſs'd the wenches round
With *diſhclout* at our tail.

So paſs'd our merry time in the happy days of yore,
But thoſe bleſt days are gone, and we ne'er ſhall ſee them more.

The Enigmas anſwered by Mr. David Daniel.

Note, I beſeech you, thro' your *glaſs*,
Yon ſpendthrift beau, within an *ace*
Of utter ruin; the laſt *oak* [ſtroke.
Now groans beneath the woodman's
Mark that *umbrella* o'er his head,
Tho' not a tear the heav'ns have ſhed. [man,
Were you to ſearch this woman-
You'd find a *tooth-bruſh* or a *fan*.
Luxurious gluttons crowd his board,
By whom his damaſk *cloth*'s ador'd,
With ev'ry ſumptuous diſh thereon,
And thus the idiot's favour's won.
They flatter, furniſh him with fun,
And laugh at ev'ry wretched *pun*.
But when the bailif's at the gate,
They fly, and leave him to his fate:
Juſt fate of him, whoſe ruthleſs door
Is ever barr'd againſt the poor;
Who, to all tender feelings dead,
Can ſee them ſtarve for lack of *bread*.
But ſoon, devoid of friends or bail,
He'll curſe his follies in a jail;
Weep his extravagance and pride,
And crave that ſuccour he deny'd.
Obdurate as the *flint* and *ſteel*,
Muſt be the heart that cannot feel
For others' woes, nor raiſe a *ſigh*,
Where objects of diſtreſs are nigh.

Miſs Betty Smales's Anſwer.

The ſoothing *verſe*, that bad me ceaſe to mourn, 6
Chear'd up my ſoul; heart-rending ſorrow flew;
Lo gratitude commands me to return
Deſerved love, and friendſhip ever true.
In me thou may'ſt each anxious thought repoſe,
Should peace-deſtroying cares diſturb thy reſt; 9

With flowing tears I'll *waſh* away thy woes, 2
And *lock* thy ſecrets in my faithful breaſt. 8
Oft hand-in-hand, o'er the green velvet mead,
We'll *bruſh* along, or ſeek the *ſhady* grove, 4, 7
Screen'd from the ſun; whilſt round us lambkins *feed*, 3, 5
And warblers tell fond echo how they love.
We'll breathe in fragrance from the genial breeze,
That gently *fans* the May-born blooming bowers, *Pr.*
That whiſpers love's ſoft ſighs midſt lofty *trees*, 1
And drinks the nectar from ambroſial flowers.
Bleſt with thy promis'd friendſhip, love, and truth,
The *jeſting* crowd may paſs unheeded by, 11
But, ah! where ſhall I find thee, generous youth?
Say where, and teach me check the heaving *ſigh*. 10

Addreſs to Delia, by Chimes.

Muſt I, my Delia, ever mourn
Thy abſence from my cot?
Ah! will my charmer ne'er return,
To this once happy ſpot?
Each morn beneath the aged *oak*,
Whoſe ſhade once gave delight,
Do I thy ſafe return invoke,
In *ſighs* I waſte the night.
How oft I've read thy *letter* o'er!
As oft again began;
Will ſhe (ſays I) uſe *tooth-bruſh* more?
Umbrella, *cards*, or *fan?*
The birds ſing ſweetly in the vale;
The *merry tale* I hear;
But harſh the note, and dull the tale,
While abſent from my dear.
My lonely *bread* in tears I eat,
I loath my dog and *gun*.
Nor *cloth*, nor water cleans my plate,
And *glaſſes* I have none.
Then come, dear maid, O quickly fly,
Into theſe longing arms,
Nor danger dread whilſt I am nigh,
I'll ſhield thee from all harms.

The Anſwer by Miſs Margaret Fitzgerald, *of Old Moſs, Cheſhire.*

Beneath ſome lofty *oak* I'll *ſigh*
The penſive hour away,
Where *fanning* breezes gently fly,
And whiſper thro' the hay.
No *cards* to me are requiſite,
No *bruſh*, or *bread*, or *blind*;
Nor *valentines*, with all their *wit*,
Can elevate my mind.
Nor *cloth*, nor gay *umbrella* now
By me ſhall e'er be ſpread;
Nor *flint* nor *ſteel* ſhall break my vow,
Since Damon's from me fled.
But underneath ſome ſecret tree
Pale death ſhall be my friend,
Shall ſet my heart from ſorrow free,
My wretched life ſhall end.

Addreſs to Delia, by Mr. Tho. Jackſon, of Belper.

Shaded beneath a venerable *oak* 1
Young Damon lay, lamenting to the wind;
Wild ſtray'd his flock; behind him caſt his crook;
And on his arm his tear-ſwoln cheek reclin'd.
A heaving throb diſtent his youthful breaſt:
"And muſt I, cruel Delia, — muſt I die"?
Fierce grief forbade; he nothing more expreſt,
But in the language love had taught, — a *ſigh*. 10

I view'd the ſcene: not *blind* to Damon's woe; 3
(Experience early taught me ſuch to feel)
The gen'rous tear I not forbade to flow;
Nor Delia could, unleſs her heart were *ſteel*. 8
Ah, cruel maid! why muſt a youth ſo true,
On whom too fortune ſmil'd, meet thy diſdain?
Why with ſucceſs the vain Lorenzo ſue,
Who well can feign, tho' never felt love's pain?
At *cards* and dice he waſtes his precious time, 9
From nymph to nymph inconſtantly doth flit;
He writes a *valentine* in paltry rhime; 6
On hoops and *fans* attempts to ſhew his *wit*. 12, 11
Diſcarded *rags* will be the gameſter's all; 2
The beau can never truly love his wife;
What will *umbrella* then, or *bruſh* avail; 7, 4
Or how will Delia ſpend a happy life?
Ah! haſte to Damon; bid him ceaſe to ſigh;
Tell him thy cruelty thou doſt repent;
With *bread* and thee he aſks no other joy:—— 5
'Tis love and competence gives true content.

The Enigmas anſwered by Hilaria.

Beneath the green *oak* where he lay.
Alexis, a perjur'd young ſwain,
Lamenting, *ſigh'd* out the long day,
Which brought no alloy to his pain.
Ah! to the *dark* chambers of death,
Untimely my Lucy is fled;
For me ſhe reſigned her breath,
For me ſhe has ſorrow'd and bled.
Tho', hard as the *flint* or the *ſteel*,
My heard no entreaties cou'd move,
Her death has withdrawn the dark veil,
Which ſhaded my pity and love.
I was deaf to her *letters* when read,
Ah how many *cards* has ſhe ſent!
She told me ſhe wanted ev'n *bread*,
And urg'd me in vain to repent.
How oft have I *bruſh*'d by her ſide,
And *jeſted* at all ſhe could ſay;
How cou'd I ſuch beauty deride!
Such virtue forſake and betray!
To my *fancy* ſuch terrors ariſe,
When my conduct appears to my view,
That I'll *wipe* all th' tears from my eyes,
Bid the world and my ſorrows adieu.

Iphigenia thus anſwers the ſame.

Hither come ye gay and lively,
To thoſe verdant plains repair;
Fanning zephyrs now invite ye
Here to baniſh all your care.
Underneath this ſhady *oak*, now
We our decent *cloth* will ſpread;
Its venerable top will ſhade you,
Form *umbrella* o'er your head.
Innocent are the amuſements
Which we now ſhall recommend;
Cards, for us, have no allurements
Like the converſe of a friend.
Bring along the *glaſs* perſpective,
That the proſpect we may view;
Fearleſs here of all invective,
We will harmleſs mirth purſue.
Liſten to that pretty ſongſter,
See him hop from bough to bough,
Little thinks the tuneful warbler,
That the *ſportſman* lurks below.
See that ſimple, honeſt peaſant
Toiling for his daily *bread*;
Sighs not for a life more pleaſant
Than his predeceſſors led.

Cou'd he *bruſh* from his remembrance,
How unkind his Phyllis prov'd.
But his *letters* and attendance
Phyllis ſaw, but, ah! unmov'd.

The Enigmas, Rebuſes, and Paradox anſwered by Mr. Francis Smith.

An oak-tree, diſhclout, window-ſcreen,
A tooth-bruſh, bread and letter;
Umbrella, gun-lock, ace of trumps,
There's none will anſwer better.
A ſigh, a jeſt—the prize a fan,
Gold, Curtis, Bayley, will,
Paradox, Wolfe, and artful ſhoe,
All your demands fulfil.

We are very ſorry our confined limits will not admit more of the ingenious anſwers ſent us by Meſſrs. Ambroſe, Amyntor, Mrs. B of Saliſbury, Bayley, Bearcroft, Booth, Miſs Diana Browne, Burrow, Crowle, Dening, Devonienſis, Dowden, Elvira, Fairbank, Florella, Gibbs, Herod, J. Jackſon, Jones, Kite, Laconicus, Lavinia, Lee, Tony Lumpkin, R. M, Myſtery, Nield, Pearſon, Peers, Rebſur, Ruſher, Swift, A. T, Miſs Tomboy, Tweedale, Tyro, Mrs. E. W, Miſs Sarah Walker, Kit Went, Williams, Woodhouſe, Woolſton, Wragg, and others.

Answers to the Rebuses and Queries.

1 Gold, 2 Curtis, 3 Bayley, 4 Will, 5 Paradox, 6 Wolfe. — The Paradox, a Shoe.

A Sonnet in anſwer to the Rebuſes, by Mr. T. Woolſton, *being an Apology to* Sylvia, *who begged the Author to write upon Friendſhip.*

Eager the muſe apply'd the yielding quill,
To pay the off'ring due at friendſhip's ſhrine;
But ah! the arduous taſk ſhe muſt decline,
For lo! the theme ſublime o'erwhelms the *will*,
On *gold* or *paradoxes Bayley*'s ſkill,
Or *Wolfe*'s or *Curtis*'s, in verſe may ſhine;
Sylvia to paint the nobler taſk be thine,
The joys that ſoft from friendſhip's fount diſtil,
Friendſhip's the link divine of human ſouls;
From heav'n deriv'd, confin'd to no degree,
Its lenient balm corroding thoughts controuls,
And ſets, from care, the fetter'd ſpirit free,
Whilſt round the heart the vital current rolls,
O may its choiceſt bleſſings wait on THEE.

The ſame by Miſs Sarah Walker, of Runſwick.

In *gold* the miſer takes delight,
A *paradox* may *Bayley* pleaſe;
But *Wolfe* and *Curtis* bravely fight,
When they are call'd to croſs the ſeas.

The Rebuses anſwered by Devonienſis.

Wolfe, Curtis, Bayley, Paradox, and Gold,
Will all the laſt year's rebuſes unfold.

The ſame by Mr. Wm. Smith, of Stow.

Gold, Curtis, and Bayley; Wolfe, Paradox and Will;
Anſwer all moſt clearly, if I have any ſkill.

Miſs Diana Browne's *Choice*.

If I had got my *Will* to chuſe,
Brave *Wolfe* I'd take, and *gold* refuſe:
Curtis's weak attempts, you ſee,
Are all a *paradox* to me.

Tho' *Bayley* fawn like ſly hyena,
He'll ne'er ſucceed with "Dear Diana!";
But give me *Wolfe*, I ſpeak it true,
The reſt I'd ſerve like worn-out *ſhoe*.

Miſs Single's *Addreſs to the Ladies*.

Beware of falſe lovers, for many, I'm told,
Will barter their conſcience to marry for *gold*;
But give me a man whoſe affection thro' life,
Will always be true to his country and wife.
Like *Curtis* or *Wolfe*, like his conduct be brave,
With courage to fight, and when conquer to ſave;
Like *Bayley* for learning, good nature and ſkill,
With plenty of riches to leave in his *will*;
And a *paradox* ſolve. Then, dear ladies, adieu;
I to ſuch a huſband would always be true.

Room will not permit us to inſert the other ingenious anſwers by Meſſrs. Ambroſe, Booth, Bayley, Burrows, Chimes, Crowle, Dawſon, Dowden, Elizabetha, Elvira, Eugenio, Fairbank, Miſs Margaret Fitzgerald, Miſs Maria G, J. Jackſon, T. Jackſon, Kite, Lee, Tony Lumpkin, R. M, Myſtery, Nield, Rebſur, Ruſher, Miſs Betty Smales, Stafford, J. T, Tyro, Mrs. E. W, Kit Went, Wragg, &c.

QUERY I. anſwered by Mr. John Burrow, of Bolton-field.

Two very ſufficient reaſons may be given for this. Firſt, as the denſity of the air at the earth's ſurface is the greateſt, bells, or any ſounds, may be heard better in a denſe than a rarefied air, as is evident by experiments on the air pump. Secondly, ſound will move along a plane, as a table, &c. the beating of a watch may be heard at the other end of the table, by laying one's ear to it, louder than at the end it lies on. But if the watch be held above the table, the ſound will not be heard half ſo loud, and ſcarcely at all at the other end. And a ſportſman, when he has loſt the cry of the hounds, will hear them again by laying his ear to the ground.

QUERY II. anſwered by Mr. Tho. Jackſon, of Belper, Derbyſhire.

Thoſe bodies which are full of pores, become darker by immerſion in water, ſuch as moſt kinds of wood, ſtone, ſlate, &c. by imbibing the water, which excludes thoſe rays of light which before penetrated their ſurfaces, and rendered them lucid. On the contrary, thoſe bodies which have few pores, ſuch as ſea-pebbles, &c. by being wetted, reflect the light more ſtrongly, and appear more tranſparent.

QUERY III. anſwered by Mr. Alex. Rowe.

This phenomenon ſeems to ariſe from an uncommon poſition of clouds ſituated near the horizon, which reflect the rays of light in ſuch manner, that they come to the eye of the ſpectator, as if he viewed the moon, or any other celeſtial object, through a proſpective glaſs, which inverts all objects, or a remote teleſcope, having one of the lenſes extracted.

QUERY IV. anſwered by Mr. John Jackſon,

At Hutton-Rudby School, near Stokeſley, in Yorkſhire; where Youth are boarded, and educated in the Claſſics and Mathematics, at 12 Guineas per Annum.

Mr. Warton, in his hiſtory of Engliſh Poetry, mentions that Henry the IIId. retained in his court a poet with a certain ſalary, named Henry d'Avranches: he was called *Maſter Henry the verſifier*; and which probably, ſays our author, implies a different character from that of the *Royal Minſtrel*, or *Joculator* (Jeſter). Mr. Warton gives other inſtances of a ſimilar kind, but this ſeems to be the firſt; and it is moſt likely to have been the origin of the preſent inſtitution of Poet-Laureate. But Chaucer, in the reign of Richard the IId. ſeems to have been the firſt who had that title. He had a pitcher of wine a day (beſides a yearly ſalary) which is ſuppoſed to be the origin of the butt of wine and ſalary to the preſent Poet Laureate.

Ingenious anſwers were given to the queries by Meſſrs. Burr, Burrow, J. Jackſon, T. Jackſon, Kite, Rowe, Swift, Stafford, Walton, Woolſton, and Wragg.

NEW ENIGMAS.

I. ENIGMA 660, by Taſſo.

Gibboſum Servum, per quem tu nobilitati
Obtines acceſſum, ſic mos, hic ecce, puella,——
Extra, ni in morbo, nudum remanere coactum:
Cernere me indutum hæres, nudum gaudet amicus.

II. ENIGMA 661, by Mr. John Jackſon, *of Hutton-Rudby School.*

I oft aſſiſt in bacchanalian revels,
And, frequent kiſs'd, make ſaints appear like devils;
Inflame them with deſires for ſomething new.
One letter from my name take,— then I ſhew
What's ſo much wiſh'd for; but when once enjoy'd,
And the poſſeſſor's mind is fully cloy'd,
He'll oft repent for what he's done amiſs.
One letter more take, — and I ſhew you what he is.

III. ENIGMA 662, by Miſs Eliza Elſton, *of L—, near Louth.*

Who is my ſire, and what am I?
He ne'er was born, I never die:
He ſuffers death, like mortal man;
From pain ſecure I ſtill remain.

Aloft in air I'm often ſeen,
As often on the verdant green;
Still, faithful, on my ſire attend,
And all his purpoſes befriend;

Till thruſt out by a younger brother:
Then I'm compell'd to ſerve another;
To mankind then I yield ſupport;
Who greatly my aſſiſtance court.
Ladies, your ſecret thoughts conceal;
Which I in ſilence ſtill reveal. —
But I expoſe myſelf too bare;
Ladies, from hence my name declare.

IV. Enigma 663, by Mr Tho. Nield, *of Hawarden.*

All hail Diarians! who delight to pore
On ſome dark myſt'ry ne'er reveal'd before.——
While thund'ring cannon, with tremendous noiſe,
Rouſe you to care, and wake you to ſurprize,
Behold our worth; we then attentive are
To all your actions—guardians of your care.——
When fowlers, greedy of the plumy prey,
Spread out their nets, and anxiouſly ſurvey
The ſpacious plain; we then direct their way
Thro' vernal paths, bedeck'd with florets gay.——
When mother Eve in bliſsful Eden found
The fatal tree, and view'd its beauties round;
We then excited her, with fond deſire,
To pluck the fruit, and knowledge to acquire.——
When Cæſar, crown'd with laurels, march'd the plain,
Stern in his looks, and haughty in his mien;
We were his friends, aſſiſted him to raiſe
His laſting honours and heroic praiſe.——
In beauty we partake the niceſt part:
When clad in black we captivate the heart:
We charm, and know the charms of others too,
And with our luſtre much embelliſh you.

V. Enigma 664, by Miſs Denmur, *of Kintbury.*

My parent's humble, and my birth is low;
Yet ſhou'd not be deſpis'd for being ſo.
Forc'd from that parent by ſome ruſtic hand;
Impriſon'd often on the green I ſtand:
Then in a damp and gloomy manſion plac'd,
With due attendance frequent viſits grac'd:
Here with ſubmiſſion to my future doom,
A different form and colour I aſſume:
Tender and young, enormous loads I bear,
Yet, tho' oppreſs'd, a ſtranger to deſpair.
Rais'd by my miſtreſs to a higher poſt,
I often travel to a diſtant coaſt.
Where e'er I fix, you probably may ſee,
A num'rous race which owe their birth to me,
Tho' daily ſought for by the rich and great,
You often view me in a humble ſtate.
In ragged garb I pleaſe e'en men of ſenſe,
Yet often give, tho' never take, offence;
And ſay with truth, what none ſince Pitt has boaſted,
By adverſe parties I am often toaſted.

VI. Enigma 665, by Delia Dunelmenſis.

A ſtranger, ladies, who durſt ne'er till now
Stain your Diaria's page, or viſit you,
Requeſts admittance, only as your ſlave,
And for a minute would your patience crave.

Know, I my being from old times do claim,
Before or Jove or Pallas had a name:
Or great Apollo, tho' ſupremely wiſe,
I claim the empire of the ſkies:
By me inſtall'd, their influence they aſſum'd;
By me the incenſe on their altars fum'd.——
If I'm exalted far above my birth,
As flaming meteors from the fogs on earth,
Yet o'er mankind my influence is ſo great,
I ſlight religion, and ſupport the ſtate.
All ſacred texts of ſcripture, tho' profound,
I give my zealous vot'ries to expound;
Myſterious truths and propheſies lay ope,
And of a mean mechanic make a pope.
In ſenates and in councils often rule,
And often dignify a knave or fool.
I pleaſe the people, yet their debts increaſe;
I lately wag'd a war, and patch'd a peace:
With penal ſtatutes I the laws expand,
And fix an inquiſition in the land;
In courts of juſtice oft thoſe laws expound;
With ignoramus juries always found.
I both exalt and beautify the beaux,
And furniſh them with all their worth—their cloths.
I teach in taverns, ſanctify the ſtews,
And furniſh poetaſters with a muſe.

VII. Enigma 666, by Momus.

Behold the lilluputian throng,
Not male or female, old or young;
Four inches tall, of ſlender ſize,
With neither mouth, or noſe, or eyes;
Who never from each other ſtray,
But ſtand in order night and day,
Like ſoldiers, marſhall'd in array.
A bloody enſign each does bear,
Yet ne'er train'd up to feats of war;
Their actions, gentler paſſions move,
And aid and fan the flames of love,
Soften the unrelenting fair,
And ſoothe the penſive ſtateſman's care.
Nimble as thought they ſkip and dance,
Yet ne'er retreat, nor ne'er advance,
Nor order change, like the world's frame
Always unalterably the ſame.
Tho' nimble, and to action free,
Yet move they never willingly;
But in their ſecret caverns ſleep
Time without end, nor ſtir nor peep,
Until ſome heav'n-born genius comes
To raiſe them from their ſleepy tombs;
By power unſeen, then up they ſpring,
Without the help of leg or wing,
They mount, and as they mount ſing.

VIII. Enigma 667, by Mr. John Fletcher, *of Cheſter.*

If general uſe and ſervice gain reſpect,
Why, gen'rous ladies, this profound neglect
Of your eſſential, ſerviceable ſlave,
That forms the handſome, and befriends the brave?

My form is pleaſing; mouth, two arms and eyes;
Of ſhining features, tho' pygmean ſize:
Tho' of my lineage I muſt freely own,
Some are degen'rate, clumſy, overgrown,
Gigantic monſters, void of eye or ear,
Tho' arms prodigious, and huge mouth appear,
Extenſive like the jaws of crocodile,
Th' dire inhabitant of fertile Nile,
And bite as keen: true I leſs ſtrength poſſeſs,
More ladies' favours, and employ in dreſs:
View the ſurrounding beauties of deſign;
The moſt eſteem'd and elegant are mine;
I 'ttend the ladies at the evening's dawn,
And ſportive gambol thro' the flow'ry lawn,
Obſequious to the fair directing hand,
Advance progreſſive, or quieſcent ſtand.
Yet one hint more to throw off all diſguiſe,
The cruel fair ſuſpend me by my eyes.

IX. Enigma 668, by Mr. John Stafford, *of Bingham.*

Ye fair, a friend whom you careſs,
Preſumes, in enigmatic dreſs,
To enter 'mongſt the learned:
If once you deign to con me o'er,
You ſurely will my name explore,
So ſoon 'will be diſcerned,
Firſt know, ere Adam liv'd on earth,
The great Jehovah gave me birth,
As holy ſcriptures tell:
And tho' ſo uſeful to mankind,
I'm doom'd, hard fate! to be confin'd
Within a diſmal cell.

My nature's odd, 't muſt be confeſs'd,
For I receive of food the beſt
From ev'ry gen'rous hand:
I wound the lover, rouſe the brave,
Give freedom, and the free inſlave,
So great is my command!
But ſtop;—methinks enough is told;
My name, ye fair, ye will unfold,
From what I have defin'd:
But take this hint before I end,
On me you chiefly do depend,
When anger rules the mind.

X. Enigma 669, by Mr. R. Richardſon.

Deep in a cavern, far from human ſight,
Where ſol ne'er darts one chearing ray of light,
My parents lay ſecure, till cruel fate
Doom'd him to torments dreadful to relate;
Thus, phœnix like, I from his aſhes roſe;
Thro' my firſt ſtage to ſuffer tenfold woes.
Where whirlwinds roar, and burſting flames appear,
And dire volcanos cloud the circling ſphere,
A dauntleſs tyrant reigns amid the gloom,
Whoſe cruel mandate ſeals my hapleſs doom:
At his terrific nod, his minions round,
With blows relentleſs ſhake the trembling ground;
But, new created, hope diſpels my fears,
And Dian's ſymbol in my form appears.
When laughing Ceres leads her joyful train
And yellow harveſts wave along the plain,

To me the ruſtic maid obſequious bends;
And life's chief bleſſing on my aid depends:
The orphan fair my circling pace reviews,
And unrepining takes what I refuſe.

XI. Enigma 670, by Mr. David Daniel.

Ladies, a band of ſoldiers brave,
Your fix'd attention humbly crave.
What tho' we deal in carnage dire,
You all our neatneſs much admire;
And when complete, and clad in white,
You view our ranks with great delight.
We're plac'd to guard a gloomy cell,
And night and day ſtand centinel.
Whate'er therein preſumes to enter,
May chance to rue the raſh adventure;
For tho' we've neither hands nor eyes,
And are of lilliputian ſize,
All that we catch, with mortal ſqueezes,
We cruſh into a thouſand pieces.
Thus mangled, down a darkſome den,
They're thrown, and ſeldom riſe again;
Unleſs (and that's too oft the caſe)
They're ſtrait'ned much for want of ſpace.
But, ladies, do not ſhun our fight,
Nor think in ſlaughter we delight;
Since partly 'tis for your dear ſake,
That we this office undertake.
Sure then you've little cauſe to flout us,
For ill you'd fare were you without us.

XII. Enigma 671, by Mr. Wm. Jones, *of Heyford*.

Far, far remote from thoſe romantic plains,
Where pleaſures ſpring, and love eternal reigns;
Where ſighing ſwains enraptur'd hug the fair,
And laſting verdure crowns the circling year;
A monſter fell did firſt his vengeance pour
On Adam's race, and beauty's charms deflow'r;
In red and purple he appear'd to view,
Scar'd mighty chiefs, and fear ſtruck peaſants flew.
Inſatiate ſtill he now extends his ſway
From pole to pole, and carnage marks his way.
Of pity void, he mocks Philander's pray'r,
And youth and age his frightful viſor wear——
Gay Coquettilla felt his rankling darts,
Who vainly triumph'd o'er a thouſand hearts;
But ſoon alas! (no fond attention ſhewn,)
Her joys were blaſted, and her empire flown;
With ſilent grief ſhe to retirement flew,
And bade to conqueſt and the world, adieu!
Who brave his fury feel his keeneſt rage,
Yet ſkilful artiſts oft his heat aſſuage;
For ſome there are who, vain of tinſel charms,
Or ſtruck with terror, bribe him to their arms;
By ſoothing arts their higheſt wiſh obtain,
Their charms, unſullied by his touch, remain
In native vigour; — ſoon the viſit's o'er,
And they, exulting, dread his ſhafts no more.

XIII. (or Prize) Enigma 672, by Mr. Bonnycastle.

The Revenge of Mentor; an Enigmatical Tale.

Young Edwin was of noble birth,
Of graceful form, and inborn worth,
His parents darling joy:
But heaven, for some mysterious end
His parents took, and to a friend
Consign'd the beauteous boy.
Mentor his name,—a virtuous sage,
Whose gentle precepts could engage
At once respect and love:
A worthier friend, a better guide,
Had not been found had heaven supply'd
An angel from above.
Guiltless as yet of every crime,
From tender youth to manly prime
The blooming stripling grew:
But now the soft alluring kind,
Whose blandishments had fir'd his mind,
Had swerv'd his reason too.
This soon the watchful tutor saw,
Observ'd the powerful bias draw,
The master passion rise;
Edwin, said he, that rock beware,
Fly, fly my child, the guilty snare,
Edwin in time be wise.
The youth his friendly council weigh'd,
And sought to shun the lovely maid,
The cause of all his pain;
But still the furious passion rose,
And Mentor now might interpose,
But interpose in vain.
Subjected long beneath his sway,
He scarcely dar'd to disobey,
And tremblingly began;
But guilty love had pierc'd his heart,
And Emma's eyes first shot the dart
That conquer'd all the man.
To her he sued, with vows of love,
Attesting all the powers above,
Her credent ear to gain;
And soon subdu'd the easy maid,
By falshood, oaths, and love betray'd,
What cannot love obtain?
To virtue lost, and lost to shame,
He now avows his guilty flame,
A libertine confess'd;
Sage Mentor's precepts soon despis'd,
And what he once so much had priz'd,
No longer touch'd his breast.

Yet oft amid his mad career,
The stern regard, and brow severe,
Of Mentor met his eye;
When thus the youth—vain babbler know,
I hate thee as my bitter'st foe,
Avoid my sight or die.
Furious he spoke, and from the fire,
With deadly wrath, and boiling ire,
A red-hot iron drew;
With one mad thrust, the hissing dart,
Like light'ning struck, and sear'd his heart,
And thro' his vitals flew.
Down drop'd his friend: and now the fair,
With deep dissimulating air,
The harden'd ruffian sought;
And soon he found the weeping dame,
Lamenting of her growing shame,
To near perfection brought.
The setting sun, with prone career,
Washasting from our northern sphere,
The downward heav'n to light;
When, tempted by his artful tale,
They wander thro' a neighb'ring dale,
And lose themselves in night.
Along a river's bank they stray'd:
And now the poor unhappy maid,
First saw her fate draw nigh;
His ghastly look, and sudden start,
With terror struck her trembling heart,
And told her she must die.
With quivering lips, and faultering tongue,
She strove to speak, and round him clung,
And cast a mournful look;
But as she cry'd, and closer press'd,
He spurn'd her from his savage breast,
And plung'd her in the brook.
The flashing waves around her close;
By turns she sunk, by turns she rose,
And strugling yields her breath;
Heaven only heard her piteous cries,
And as the murderous villain flies,
Breathes vengeance for her death.
Loud thunders roll, and cross his way
Pale spectors glare, and lightenings play,
Whilst thick in every wind,
Sad shrieks, and dying groans, convey-

From injur'd Emma's plaintive ſhade,
Diſtract his horrid mind.
And now appears dead Mentor's ghoſt,
Calling a ghaſtly develliſh hoſt
Of furies from below; [impart
Who, arm'd with ſcorpion's ſtings,
Hell pains, and teach his harden'd
To feel a taſte of woe. [heart
With terror ſtruck, in ſad deſpair,
He wander'd on, unknowing where,
Or what his awful doom;
When gazing round, he firſt deſcry'd
The mournful river's murmuring
And Emma's watery tomb. [tide,

To fly he ſtrove, but ſtrove in vain,
Mentor, with all his griſly train,
Stood clammerous at his ſide;
And, pointing to the waves below,
The livid corſe of Emma ſhow,
In death, his fatal bride.
Die wretch accurſt, ſtern Mentor
ſaid,
And hurl'd him to his liquid bed,
Then vaniſh'd quick in air:——
Mourn o'er the tale, each gentle
belle,
And to your faithful lovers tell,
This champion of the fair.

*** *Mr. J. G's enigma is much too long to be inſerted* " without mutilations." *The enigma by Academicus, tho' written in eaſy flowing verſes, is too obſcure to be found out; the deſcription and alluſions being too remote and indefinite. Other enigmas will have their turn: that by Eugenio will merit a diſtinguiſhed place next year.*

New Rebuses and Queries.

I. Rebus, by Mr. Thomas Eland.

A judge of Iſrael who on Delilah's lap,
In Sorek's vale, indulg'd the fatal nap;
He who beheld the almighty face to face;
And he whoſe rod brought wond'rous things to paſs;
That righteous man with whom two angels fed,
Reſted the night, and eat unleaven'd bread;
He who on fiery ſteeds was wing'd to heaven;
He to whom wiſdom, wealth, and fame were giv'n;
Join theſe initials, and place Betty near,
You'll view a maid unequal'd, and ſincere.

II. Rebus, by Cornuto.

My ſiſter and wife, and what with them I'd do,
A town in the county of Salop will ſhew.

III. Rebus, by Hilaria.

Part of a day in ev'ry week,
Join'd to a charm near Delia's cheek,
Will an important ſtate diſcloſe,
The ſource of happineſs or woes.

IV. Rebus, by Mr. Richard Dening.

An inſect of note, with one-third of a grain,
The name of a liquor with eaſe will explain.

V. Rebus, by Miſs Tomboy.

A vowel, a ſwine, and a ſheep pray unite,
And they'll ſhow you a thing without fail,
Which, though leaſt of its ſpecies, will oftentimes bite,
And carries a ſting in its tail.

VI. Rebus, by Academicus.

What moſt aſpiring women wiſh to be;
The unſtain'd goddeſs in epitome,
Three-fourths of her to whom ſome bend the knee;
Denote a *treat* — but, worthy of remark,
Serv'd up by various *cooks*, and in the *dark*.

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Answers to the Mathematical Queſtions.

I. Queſtion 818 anſwered by Amicus.

IT is evident, at firſt ſight, that y is much greater than x; divide therefore the ſymbolic ſide of the 2d equation by that of the firſt, and the quotient is y, with a negative remainder: divide the numeral ſide in the ſame manner, and the quotient, ſo as to leave a negative remainder, is 62; which ſubſtituted for y in the firſt equation, by a quadratic x is found $= 4$: which two numbers anſwer the conditions of the queſtion. If they had not, this value of x muſt have been ſubſtituted in the 2d equation, whence a nearer value of y would have been obtained by a quadratic, and thence a nearer value of x. And ſo on to any degree of exactneſs.

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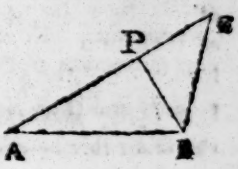
Calcul. All the triangles ACS, SDR, RBQ, QAP being ſimilar, and AS $= 10$, and AC $= 6$; therefore CS $= 8$, and SD $= 2$. Hence CS : CA :: SD : DR $= 1\frac{1}{2}$, and hence BR $= 4\frac{1}{2}$;
CA : CS :: BR : BQ $= 6$, - - AQ $= 4$;
AS : AC :: AQ : AP $= 2\frac{2}{5}$, required.

Nearly in this way was the ſolution given by Meſſrs Amicus, Bownas, Cock, Dowden, Evans, Gough, Hodgſon, Jackſon, Pickernell, Sanderſon, Sharp, and Tattam.

III. Queſtion 820 anſwered by the Rev. Mr. Rob. Bownas.

The rectangle AC . CP is given, being equal to half the exceſs of $AC^2 + CB^2$ above AB^2; therefore PC is known, becauſe AP . PC is given by the queſtion. Hence if PC be produced till CP . PA $=$ the given rectangle of the ſegments, the indefinite perp. PB erected, and AB applied, the triangle ABC will be that required.



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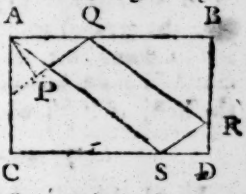
Let AS be made $= 10 =$ AB; then becauſe the angles of incidence and reflection are equal, make $\angle$ DSR $=$ CSA, and $\angle$ BRQ $=$ DRS, and $\angle$ AQP $=$ BQR, alſo AP $\perp$ PQ; ſo ſhall PQRSA be the path of the ball, and AP the neareſt diſtance at the beginning.

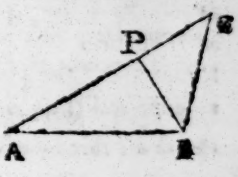


Calcul. All the triangles ACS, SDR, RBQ, QAP being ſimilar, and AS $= 10$, and AC $= 6$; therefore CS $= 8$, and SD $= 2$. Hence CS : CA :: SD : DR $= 1\frac{1}{2}$, and hence BR $= 4\frac{1}{2}$;
CA : CS :: BR : BQ $= 6$, - - AQ $= 4$;
AS : AC :: AQ : AP $= 2\frac{2}{5}$, required.

Nearly in this way was the ſolution given by Meſſrs Amicus, Bownas, Cock, Dowden, Evans, Gough, Hodgſon, Jackſon, Pickernell, Sanderſon, Sharp, and Tattam.

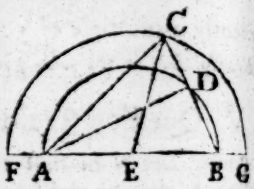
III. Queſtion 820 anſwered by the Rev. Mr. Rob. Bownas.

The rectangle AC . CP is given, being equal to half the exceſs of $AC^2 + CB^2$ above AB^2; therefore PC is known, becauſe AP . PC is given by the queſtion. Hence if PC be produced till CP . PA $=$ the given rectangle of the ſegments, the indefinite perp. PB erected, and AB applied, the triangle ABC will be that required.



C

The ſame by Mr. James Williams, *of Plymouth Dock*.



Analyſis. Let A B C be the required triangle. Biſect A B in E, and join C E, which will be given becauſe $AC^2+BC^2=2AE^2+2CE^2$. Again, with center E deſcribe the two ſemicircles A D B, F C G, and draw A D, which will be $\perp$ B C becauſe the $\angle$ A D B, in a ſemicircle, is a right angle: then the rectangle A G . G B $=$ (B C . C D $=x$) B D . D C $+$ D C^2; hence C D is given, becauſe both the rectangles A G . G B and B D . D C are given.

Wherefore, having deſcribed circles with the two given radii E A, E F, from any point in the one apply C D to the other of the given length, which produce to meet A D B again in B; draw the diameter A B, and join A C; ſo ſhall A B C evidently be the required triangle.

Elegant geometrical ſolutions were alſo given by Meſſrs. Amicus, Brinkley, Exul, Gough, and Sanderſon.

An Algebraic Solution by Mr. Thomas Cock, *of Cirenceſter.*

Put A B $=a$, B D . D C $=b^2$, $AC^2+BC^2=c^2$, and C D $=x$; then B D $=\frac{b^2}{x}$, B C $=x+\frac{b^2}{x}$, $2BC\cdot CD=2x^2+2b^2$; hence (by Simp. Geom. 10. 2, $AB^2+2BC\cdot CD=AC^2+BC^2$, or) $a^2+2x^2+2b^2=c^2$, and $x=\sqrt{\frac{1}{2}c^2-\frac{1}{2}a^2-b^2}$.

Algeb. Solu. were alſo given by Meſſrs. Burrow, Dalton, Dowden, Evans, Hodgſon, Jackſon, Kite, Pickernell, Robinſon, Rowe, and Sharp.

IV. Queſtion 821 anſwered by Amicus.

It has long ago been proved by Hudde, Preſtet, Mac Laurin, and many others, that if the given equation has two equal roots, one of them is alſo a root of $5x^3+3qx-2r=0$: They therefore direct to take the greateſt common meaſure of this equation and the given one, and in doing this, the firſt remainder after actual diviſion is the quadratic in queſtion, one of whoſe roots muſt be one of the equal ones of the firſt, if it have any ſuch.

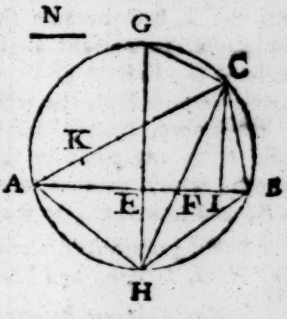
The ſame by the Rev. Mr. Bownas.

By Maclaurin's Alg. ch. 4. part 2, one of the equal roots of the given equation will be a root of the biquadratic $5x^4+3qx^2-2rx=0$, and conſequently of the cubic $5x^3+3qx-2r=0$; hence, denoting the ſaid root by R, both the cubic and given ſurſolid will have $x\pm R$ for a diviſor. Now it is well known, that if any quantity be a diviſor of two or more other quantities, the ſaid quantity will alſo be a diviſor of their ſum and difference, and of any multiple of their ſum or difference. If the above cubic be multiplied by $\frac{1}{5}x^2$, the difference of the product and the given equation will be $\frac{2}{5}qx^3-\frac{3}{5}rx^2-t=0$; and if the ſaid cubic be multiplied by $\frac{2}{25}q$, the difference of the product and the laſt equation will be $\frac{3}{5}rx^2+\frac{6}{25}qqx-\frac{4}{25}qr+t=0$; this being

ivided by $\frac{1}{5}r$, there results $x^2 + \frac{298}{5r}rx + \frac{5r}{3r} - \frac{49}{15} = 0$, which being vidently a multiple of $x \pm R$, must theref. have one of its roots $= r$.

Nearly thus is the solu. given by Messrs. Hellins, Rowe, and Sanderson.

V. Question 822 answered by Mr. George Sanderson.



Constr. Let N be half the given dif. of the sides. Make the right-angled triangle F I C such, that the hypot. C F may be equal to the given bisecting line, and the angle F C I to half the given one; produce F I to E so that F E × E I = N²; draw the indef. ⊥ G E H, and produce C F to meet it in H, also draw C G ⊥ C F meeting it in G; on the diam. G H describe a circle cutting E I produced in A and B. Join A C, B C, and A B C is the triangle required.

Demonst. On A C take A K = N = half the given dif. of A C, B C.—Because the diam. G H is ⊥ to A B, theref. A E = E B, A H = H B, the ∠ A C H = B C H, and the ∠ F C I = F H E half the dif. of the angles A B C and B A C; also E I is half the dif. of the segments A I and B I, and E F half the dif. of A F, B F; whence, by a well-known property of plane triangles, E F × E I = A K² = N²; theref. 2 N = 2 A K = A C − B C.

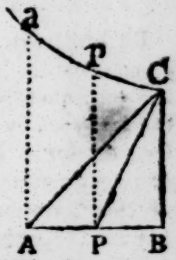
And thus nearly is the solu. given by Messrs. Amicus, Bownas, and Gough.

An Algebraical Answer by Mr. Robert Dowden.

Put I F = a, C F = b, A C − C B = $2d$, A C + C B = $2x$, A E = E B = z, and E F = y; then by the principles of geom. $x : z :: d : y$, or $xy = dz$; and $b^2 + z^2 - y^2 = x^2 - d^2$; and $z : x :: d : a + y :: y : d$, or $y^2 + ay = d^2$; hence $y = \sqrt{d^2 + \frac{1}{4}a^2} - \frac{1}{2}a$. Also from the 1st equation $z = \frac{x}{d}y$, which substituted in the 2d, and reduced, it is $x = d\sqrt{\frac{b^2 + d^2 - y^2}{d^2 - y^2}}$.

Alg. solu. were also given by Messrs. Evans, Exul, Robinson, and Rowe.

VI. Question 823 answered by Amicus.



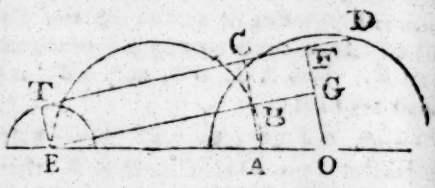
Since the velocity of the body, moving from A to B, is at any point P inversely as C P, the elementary time at P must be as C P . A P; or, describing, to the semi-diameter B C, the equilateral hyperbola a p C, and erecting A a and P p ⊥ A B, since A a = A C, and P p = P C, theref. C P . A P = P p . A P, and the time of describing A P is as the area a A P p a, and that of moving from A to B as the hyperbolic area a A B C = $A = \frac{1}{2}$A B . A C + $\frac{1}{4}$C B² . hyp. l. of $\frac{AB + AC}{BC}$; and as the velocity per second is $\frac{AC}{3BC}$ yards, the time is $\frac{3A}{AC}$ = 367″, 034 as required.

The same by the Rev. Mr. Bownas.

Put $BC = a$, $AB = b$, $AC = c$, and $PB = x$, v the velocity at P, and t the time. Then is $v = \frac{c}{\sqrt{a^2+x^2}}$, conseq. $\dot{t} = \frac{\dot{x}}{v} = \frac{\dot{x}\sqrt{a^2+x^2}}{c}$; $\left\{\begin{array}{l}\text{and } t \text{ corrected when}\\ x = b \text{ gives}\end{array}\right\}$ $\frac{1}{2}b + \frac{a^2}{2c} \times \text{h. l.}\ \frac{b+c}{a} = 266''$ $= 4'\,26''$ the time required.

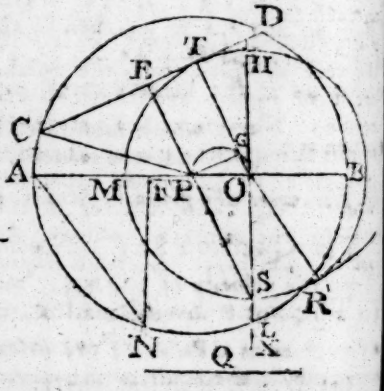
Nearly thus was the solution given by Messrs. Dowden, Sanderson, and Williams. And other solutions by Messrs. Hodgshon, Jackson, and Rowe.

VII. Question 824 answered by Mr. George Sanderson.



Suppose the thing done, and TCD the required line. Join the centers E, O, of the given circles; and draw EBG‖, and TE, ABC, OGF ⊥ TD. Then, because of parallel lines, TF = EG, TE = FG; and, by sim. △s, TC (EB) : CF (BG) :: EA : AO, therefore the point A is given, and the ∠ EBA = TCA being right; whence, on EA describe the semicircle ABE, and (by Apol. Inclin.) draw ABC cutting the circles in B and C so that CB = TE, and through C draw TCD to touch the less circle in T, and it is done.

The same by Mr Nathan Parnell.



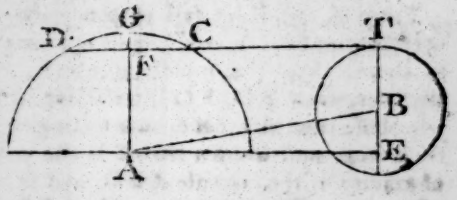
Constr. Through the centers O, P of the given circles draw the diam. AB, which divide at M in the given ratio; draw HOX ⊥ AB, and take SX : SL :: HL : HS; apply AN = BM − AM, draw NF ⊥ AB, and take Q : HS :: AF : BF; then on OP describe the semicircle PGO, and OGT, so that $GO^2 + GO \times Q$ may be $= PO^2 - SX \times Q$; lastly draw CTD ⊥ OT, and it is done.

Demonstr. Draw PE ⊥ CD, and PG ⊥ OT; draw also the tangent LR, and the radii OR, PL. Then, by constr. $GO^2 + GO \times Q = PO^2 - SX \times Q$, or $Q \times \overline{SX + GO} = PO^2 - GO^2 = PG^2 = ET^2$; and conseq. by constr. AF : BF :: Q : HS :: $Q \times \overline{SX + GO} = ET^2 : HS \times \overline{SX + GO} = HS \times SX + HS \times GO$; but by constr. $HS \times SX = HL \times LS = LR^2 = OL^2 - OR^2 = PC^2 - PO^2 - OT^2$, because PC = PL, and OT = OR; therefore $HS \times SX + HS \times GO = PC^2 - PO^2 - TO^2 + 2TO \times GO$; and because $2TO \times GO - TO^2 = GO^2 - TG^2 = GL^2 -$

$PE^2 = PO^2 - PG^2 - PE^2$, it is evident that $HS \times SX + HS \times SG = PC^2 - PE^2 - PG^2 = CE^2 - TE^2$; wherefore $CE^2 - TE^2 : TE^2 :: AB - AF = BF : AF$, and by comp. $CE^2 : TE^2 :: AB : AF :: AB^2 : AF \times AB = AN^2$, or $CE : TE :: AB = MB + MA : AN = MB - MA$ by constr. hence by comp. division, &c. $CT (= CE + ET) : TD (= CE - ET) :: 2BM : 2AM :: BM : AM$ the given ratio by construction.

Geometrical solutions were also given by Messrs. Amicus, Bownas, Dalton, Hodgson, and Pickernell.

The same by Mr. Thomas Robinson, *of Biddick.*



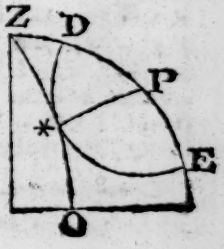
Let A and B be the two centers, AE ∥ and AF and TBE ⊥ DCB the required line. Since TC to TD is a given ratio, their half sum and half dif. namely FT to FD or FC will be in a given ratio, which let be that of m to n. Put also the radius $AG = a$, radius $BT = b$, $AB = c$, and $AF = ET = x$. Then $BE = x - b$, $AE^2 = FT^2 = c^2 - \overline{x - b}^2$, and $FC^2 = a^2 - x^2$; wherefore $c^2 - \overline{x - b}^2 : a^2 - x^2 :: m^2 : n^2$; hence, multiplying extremes and means, &c. we have $\overline{m^2 - n^2} \cdot x^2 + 2n^2 bx = m^2 a^2 + n^2 b^2 - n^2 c^2$; the root of which quadratic gives AF, &c.

Alg. solu. were also given by Messrs. Cock, Dowden, Rowe, and Williams.

VIII. Question 82; answered by Mr. Isaac Dalby.

If the azimuth of a circumpolar star, or one whose co-declin. is less than the co-lat. of the place of the same name as the declin. be taken on each side of the meridian when at the greatest, from the elevated pole; then it is evident that *half the sum* of these two azimuths will be the true azimuth from the north, or south, according as the lat. is north or south, and that *half the diff.* will be the variation of the needle. Now supposing, at the time of observation, an hour circle to pass through the star at the point where the azimuth circle touches its parallel of declination, there will be formed a right-angled triangle, where there is given a leg = the star's polar distance, and the opp. angle = the azimuth; whence, As *sin. azim.* : *sin.* ✻ *'s polar dist.* :: *radius* : *sin. hypot. the co-lat. sought.*

The same by Mr. Alexander Rowe, *of Reginnis, near Penzance, Cornwall.*

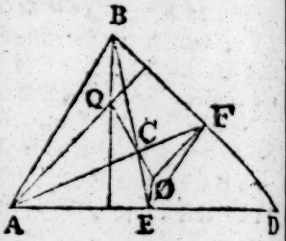


Let D ✻ E represent the parallel of declination of any known object, as a star, &c. whose declination is greater than the latitude of the place of observation. From the zenith draw the quadrant Z O to touch the parallel of declination in ✻; then Z ✻ P will be a right angle, and the ∠ ✻ Z P the greatest azimuth that such an object can make in that latitude. On both sides of the meridian let this greatest

azimuth be taken; then the horizontal middle of these two observations will be the true meridian, and shews the variation of the needle. And to find the lat. in the right-angled $\triangle ZPS$ are given the $\angle SPZ$ the azimuth, and PS the co-declination; whence sin. SPZ : sin. PS :: radius : sin. ZP the co-latitude.

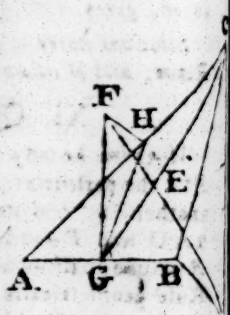
Nearly in the same manner was the solution given by Messrs. Amicus, Bownas, Hodgson, and Sanderson.

IX. Question 826 answered by Amicus.



From A and B let fall perpendiculars to the opposite sides intersecting in Q; parallel to them, thro' the middle points E, F of the sides, draw EO, FO intersecting in O; join EF, and AF, BE intersecting in C: then it is well known that C is the center of gravity of the triangle ABD, and O that of its circumscribing circle, also $AB \parallel$ and $= 2EF$, and $\therefore BC = 2CE$, $AC = 2CF$, and by reason of the parallel lines the triangles AQB, FOE are equiangular, conseq. $AQ = 2OF$, $BQ = 2EO$, and $BQ : OE :: BC : CE$, therefore the two triangles BCQ, ECO having the angles at B and E equal, and the sides about them proportional, must be similar, and conseq. the $\angle BCQ = ECO$; theref. Q. C, O, are in a right line; and because $BC = 2CE$, $\therefore QC = 2CO$. *q. e. d.*

The same by Atticus, *the Proposer*.

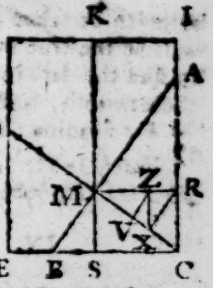


Let D be the intersection of perpendiculars drawn from the angular points A, B, C, on the opposite sides; E the center of gravity of the $\triangle ABC$, and F the center of a circle passing thro' A, B, C: then shall D, E, F be in a right line; and DE to EF in a given ratio.

Bisect AC in H, and draw DB, DC, CEG, FG, FH, and GH. From the nature of the center of gravity AB is bisected in G; and, from the nature of the circumscribing circle, FG will be $\perp AB$, and $FH \perp AC$.—Because GH is $\parallel BC$, GF to DC, and FH to BD, the $\triangle$s BCD, HGF are equiangular, and CD : GF :: CB : GH; but $BC = 2GH$, theref. $DC = 2FG$. Again, in the $\triangle$s GEF, CED, because $CE = 2EG$ (from the nature of the center of gravity), and $CD = 2GF$, $CD : CE :: GF : GE$; and $\angle DCE = FGE$ because CD is $\parallel FG$: theref. the $\triangle$s GEF, CED are equiangular, and the $\angle FEG = CED$. But CEG is a straight line, theref. FED is also a straight line.—Also, because of the similar $\triangle$s GEF, CED, $DE : EF :: CE : EG :: 2 : 1$, that is, in a given ratio.

Demonstrations were also given by Messrs. Bownas, Gough, Hodgson, Jackson, Pickernell, and Sanderson.

X. Queſtion 827 anſwered by Amicus.



Draw MS ‖ to the edge AC biſecting the end CE of the leaf in S, biſect SE in B, on BC diam. deſcribe a ſemicircle cutting MS in M, draw BMA which will be the creaſe required.—For MC = MD is ⊥ AB, therefore C will be doubled to D: draw MR ‖ to CE, RX to AB, XZ to AC, and ZV to AB; then, by ſim. △s, AB : RM = CS : : RM : ZV, and becauſe RM is given, AB will be a minimum when ZV is a maximum; RM² : MX² = □RMZ : : ZX² = □RZM: ZV², which is therefore a maximum when the ſolid ZR . ZM² is ſo, that is, by Theor. 17 of Simpſon on Maxima, when ZM = 2ZR, and conſeq. SC = 2SB as by conſtruction.

Nearly in the ſame manner is the ſolution given by *Mr. George Sanderſon*, who alſo adds this *Note*: Becauſe AB = 3MB, therefore AC² = 2BC²; but BC = ¼EC; conſeq. if IC be leſs than ¼EC√2, or 8IC² leſs than 9EC², then KS will be the leaſt creaſe, or the front edge will coincide with the back.

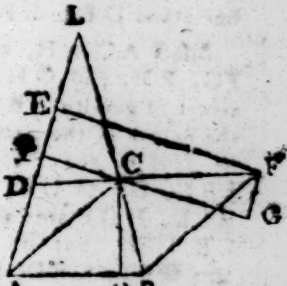
Ingenious conſtr. were alſo given by Meſſrs. Beck, Bownas, and others.

The ſame Analytically by Mr. John Gough, *of Kendal*.

It is evident that CMD is biſected at right angles by the creaſe AMB, and if from S, the middle of EC, a perp. SK be drawn, it will always paſs thro' M: then the equiangular △s BSM, BCA give BS² : BC² : : BM² = BS × BC : BA² = BC³ ÷ BS = $x^3 \div \overline{x - \frac{1}{2}a}$, putting EC = a, and BC = x. This in fluxions and reduced, gives $x = \frac{3}{4}a$.

Solutions were alſo given by Meſſrs. Dowden, Hodgſon, Pickernell, Reeve, and Williams.

XI. Queſtion 828 anſwered by Amicus.



If there be any where taken a right line P = the perimeter of the trapezium ABCD, another Q = a mean proportional to $P - 2AD$ and $P - 2DC$, and a third right line R = one to $P - 2AB$ and $P - 2BC$, the Rule geometrically expreſſed is, that a rectangle under Q and R is equal to 4 times the area of the trapezium. But $P - 2DC$ = AB + BC + AD − DC = the ſum of AD − DC and AB + BC, in like manner $P - 2AD$ = the dif. of AB + BC and AD − DC. By Simp. Geom. 2. 6. and 7. the rect. under $P - 2DC$ and $P - 2AD$ = the dif. of the ſquares on AB + BC and AD − DC = $AB^2 + BC^2 - AD^2 - DC^2 + 2AB \cdot BC + 2AD \cdot DC = Q^2$; and in like manner it appears that $R^2 = 2AB \cdot BC + 2AD \cdot DC - AB^2 - BC^2 + AD^2 + DC^2$. Draw AC and BF ‖ to it and meeting DC

produced in F, draw alſo CQ ⊥ AB, FE and GCP ⊥ AD produced, and FG ∥ AE. Then the △s ABC, AFC being between the ſame parallels, are equal, and △AFD = the trapezium, which being in a circle, the ∠BCF = DAB, DFB = DCA = DBA, and the △s DAB, BCF ſimilar, ∴ 2AD . CF = 2AB . BC, and 2AB . BC + 2AD . DC = 2AD . DF, moreover ∠CFG = PDC = QBC, and ∴ △s CQB, CGF ſimilar, and QB : GF :: CB : CF :: AD : AB, or AB . QB = GF . AD; but $AC^2 = AD^2 + DC^2 + 2AD . DP = AB^2 + BC^2 - 2AB . BQ$ (2AD . GF), and by equal addition $AB^2 + BC^2 - AD^2 - DC^2 = 2AD . DP + GF = 2AD . DE$, conſeq. $2AD . DE + 2AD . DF = Q^2$, and $2AD . \overline{DF - DE} = R^2$, conſeq. the rect. Q. R = one under 2AD and a mean propor. to DF + DE and DF − DE, but that mean propor. is = EF, wherefore rect. Q. R = 2AD . EF = 4△ADF = 4 trapezium. *q. e. d.*

Otherwiſe. Produce AD, BC till they meet in L, then the △s DLC, BLA being ſimilar, are in the ratio of DC^2 to AB^2, and by diviſion $DC^2 : AB^2 - DC^2 ::$ △DLC : trap. ABCD. Alſo

$$AB : CD :: \begin{cases} AL + BL : CL + DL \\ AL - BL : CL - DL \end{cases}, \quad AB - DC : DC :: AD + BC : CL + DL$$
$$AB + DC : DC :: AD - BC : CL - DL$$

∴ by the doct. of proportion,

$$AB - DC : DC :: \begin{cases} AB + BC + AD - DC : CL + DL + DC \\ BC + AD + DC - AB : CL + DL - DC \end{cases}$$
$$AB + DC : DC :: \begin{cases} AB + DC + AD - BC : DC + CL - DL \\ AB + DC + BC - AD : DC + DL - CL \end{cases}$$

} where the factum under the four laſt conſequents giving the known rule for 4 times the △DLC, and that under their antecedents the rule for 4 × trapezium, and the one rule : the other :: $DC^2 : AB^2 - DC^2 ::$ △ : trap. their truth is manifeſt.

Moſt of the other gent. (beſides the propoſer) who anſwered this queſtion, referred to prop. 40. book 4 of Emerſon's Geom. for the demonſtration.

XII. Queſtion 829 anſwered by Plus Minus, *the Propoſer.*

Lemma. There cannot be more than 6 polygons, nor fewer than 3 uſed at once, to complete the ſpace round a point. Not more than 6, becauſe 6 angles of the triangle (the ſmalleſt angle of any polygon) are equal to 4 right ones. Not fewer than 3, becauſe one angle of any polygon is leſs than 2 right ones. Nor can there be more than 3 *ſorts* of polygons uſed at once; becauſe the 3 ſorts whoſe angles are ſmalleſt, when one of each are added together, make 60° + 90° + 108° = 258°, and if to this you add the next greater (120°) the ſum will be 378°, which is greater than 4 right angles.

This premiſed, let x, y, and z, be the number of ſides in the 3 ſorts; then will $\left\{ \frac{2x-4}{x} + \frac{2y-4}{y} + \frac{2z-4}{z} \right\}$ be the number of right angles in the ſum of one angle of each ſort; and this, if we uſe only 3 polygons, muſt be equal to 4. Hence $x = \frac{2yz}{yz - 2z - 2y}$; but this, by the nature of the queſtion, muſt be a whole number. Now if we ſuppoſe that $z = 3$, we ſhall have $\left\{ \begin{matrix} x = 42, 24, 18, 15, 12, 10, 9, 8, \text{or } 7, \\ y = 7, 8, 9, 10, 12, 15, 18, 24, \text{or } 42, \end{matrix} \right\}$;

but if we ſuppoſe $z = 4$, we ſhall have $\begin{cases} x = 20, 12, 8, 6, \text{ or } 5, \\ y = 5, 6, 8, 12, \text{ or } 20. \end{cases}$ If $z = 5$, we ſhall have $\begin{cases} x = 20, 10, 5, \text{ or } 4, \\ y = 4, 5, 10, \text{ or } 20. \end{cases}$ Laſtly if $z = 6$, we have $\begin{cases} x = 12, 6, \text{ or } 4, \\ y = 4, 6, \text{ or } 12. \end{cases}$

If we uſe 4 polygons, there muſt be two of one of the ſorts; let that be of the ſort z. Then $\frac{2x-4}{x} + \frac{2y-4}{y} + \frac{4z-8}{z} = 4$; hence $x = \frac{yz}{yz-z-2y}$ a whole number. Where $\begin{cases} x = 4, 6, 12; \\ \text{if } z = 3, \text{ we have } \begin{cases} y = 12, 6, 4. \end{cases} \end{cases}$ But if $z = 4$, then $\begin{cases} x = 3, 4, 6; \\ y = 6, 4, 3. \end{cases}$ —If 5 polygons be uſed, there muſt be either 2 of 2 ſorts, and one of the other; or elſe 3 of one ſort, and one of each of the other. In the firſt caſe let $\frac{4x-8}{x} + \frac{4y-8}{y} + \frac{2z-4}{z} = 4$; ſo ſhall $x = \frac{4yz}{3yz-4z-2y}$ a whole number; and if $z = 3$, then $x = 3$ or 4, and $y = 4$ or 3. In the 2d caſe let $\frac{6z-12}{z} + \frac{2x-4}{x} + \frac{2y-4}{y} = 4$; hence $x = \frac{2yz}{3yz-2z-6y}$ $\begin{cases} \text{a whole num.} \\ \text{and if } z = 3, \end{cases} \begin{cases} x = 3, 4, 6, \\ y = 6, 4, 3. \end{cases}$ —If 6 polygons be uſed, they muſt be all triangles. So that a pavement may be laid 10 ways with 3 polygons, thus,

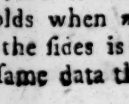
3, 7, 42	With 4 polyg.
or 3, 8, 24	4 ways, thus,
or 3, 9, 18	3, 3, 4, 12
or 3, 10, 15	or 3, 3, 6, 6
or 3, 12, 12	or 3, 4, 4, 6
or 4, 5, 20	or 4, 4, 4, 4.
or 4, 6, 12	With 5 polyg.
or 4, 8, 8	2 ways, thus,
or 5, 5, 10	3, 3, 3, 4, 5
or 6, 6, 6.	3, 3, 3, 3, 6.

With 6 polygons one way, viz. all triangles. So that there are 17 ways of laying a pavement with regular polygons; but without regard to the order in which they may be placed.

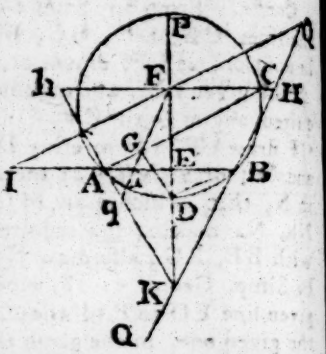
Solutions were alſo given by Meſſrs. Amicus, Bownas, Dowden, Hodgſon, Jackſon, and Pickernell.

XIII. Queſtion 830 anſwered by Amicus.

The rectangle under the perimeter and radius of the circle inſcribed in any $\triangle$ is $=$ that under the baſe and perpendicular; but when the vertical $\angle$ is given, that radius is in a given ratio to the dif. between the baſe and ſum of the ſides, as is well known; take two lines m and n in that ratio, and then $m : n ::$ rect. under that rad. and perim. $=$ rect. baſe and perp. : that under the ſaid dif. and perim. $=$ the ſquare of the ſum of the ſides minus that of the baſe AB; and AP being $=$ the given ſum of the baſe and perp, when the ſum of the ſides is a maximum, $n.AB.BP + m.AB^2$ muſt be a max. or $AB.n.AP - AB.nAB + m.AB.AB$ a max. Take $n - m : n :: AP : AC$, and the rect. $AB.AC - AB^2$ or $AB.BC$ is a max. theref. by Eucl. 2. 5, $AB = BC$; but which only holds when n is greater than m, or the dif. between the baſe and ſum of the ſides is greater than the radius of the inſcribed circle.—With the ſame data the dif. of the ſides will be a max. when one ſide vaniſhes.



The ſame by Mr. George Sanderſon.



Imagine the thing done, and ABC the req. triangle. Let DP, ⊥ to AB, be the diameter of the circumſcribing circle; let CF be ⊥ DP and DG to AC, join DB, and draw FI ∥ DB meeting AB in I. Then DP biſects AB in E, and the ∠EDB (=IFE) is = the comp. of half the given ∠ ACB: moreover it is manifeſt, from prop. 13 Simp. Trig. that CG is half the ſum of the ſides AC, BC, and AG half their dif. alſo, by prop. 18, BE × BI = CG². On ED produced take EK = 2EB = AB, and draw KBQ meeting FC and FI produced in H and Q. Then FK = 2FH is manifeſtly = the given ſum of the baſe and perp. alſo KH and QH are given becauſe the ∠s KFH and EFI are given; but by ſim. Δ's, FH : HQ :: IB : BQ, and FH : HK :: EB : BK, whence FH² : QH × HK :: EB × BI (CG²) : QB × BK; and theref. when CG is given or a max. then QB × BK is given or a max. but this laſt is well known to be a max. when KQ is biſected in B. Whence the conſtruction is manifeſt from the analyſis.

But if the ∠IFK be leſs than the ∠FKH, then Q will fall on the contrary ſide of K; in which caſe, the ſum of the ſides will be a minimum; when the triangle is an iſoſceles one, (or the circle touches FH in the point F:) the max. only obtaining when the ⊥ EF vaniſhes, as is evident from the analyſis.

By making the ∠KFi = half the given one, and Fh = FH = ½FK; if Kh be joined, and Fi produced to meet it in q. Then, by prop. 19 Simp. Trig. AE × Ai = AG²; and, by ſim. Δs, Fh² : qh × hK :: AE × Ai (AG²) : qA × AK, and theref. qA may be taken of any length leſs than hq, AG than hF, which is its greateſt limit, becauſe qK is a given quantity; and when Aq = hq, Ai is = AE = hF, and conſeq. the ⊥ FE = o.

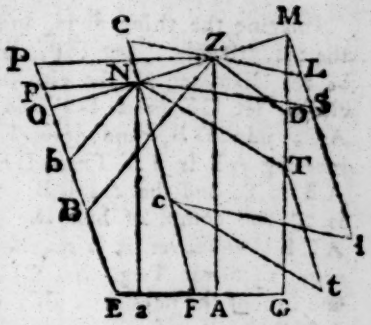
N. B. *The line* BC *is wanting in the figure.*

We are ſorry our limits will not admit the elegant geometrical ſolution by the Rev. Mr. Bownas.

Analytical ſolution by Mr. Tho. Robinſon, *of Biddick.*

Put s = ſum of baſe and perp. c = cotang. of half the vert. ∠, z = ſum or dif. of the ſides, and x = the baſe. Then $s - x$ = the perp. and by prop. 13 or 14 Simp. Trig. $2sx - 2x^2 : z + x \times z \circ x :: 1 : c$, hence $z^2 \circ x^2 = 2csx - 2cx^2$, and $z^2 = 2csx \circ 2cx^2 + x^2$ a max. which in fluxions and reduced, gives $\left\{ x = \frac{cs}{2c \circ 1} \right.$, viz. $x = \frac{cs}{2c - 1}$ or $= \frac{cs}{1 - 2c}$ according as the ſum or difference of the ſides is a maximum.

XIV. Queſtion 831 anſwered by Amicus.



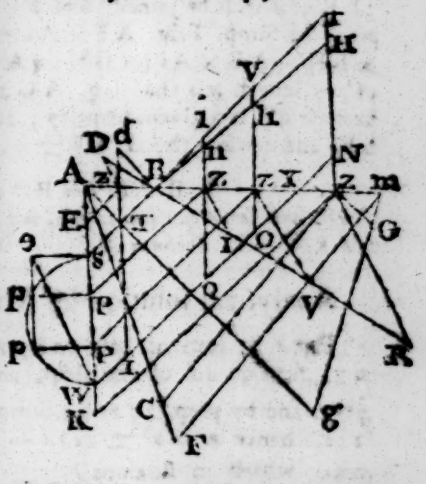
Conſtr. From any point c in one of the lines CF, DG, EG, BE given in poſition, as CF, drawn ct, cl each = the given ſum, and making the required angles with CF, DG; ‖ to CF draw tT, lM meeting DG in T and M; draw NT‖ct meeting CF in N, thro' which draw MO; draw Nb, Na making the required angles with BE, EG; alſo draw Np‖EG; by Simp. Geom. 5. 18, produce the given line EO to P till the □OPE: the given one, in the given ratio of □OpE : □aNb, and thro' P‖ to EG draw PZ meeting OM in Z, the point required.

For draw ZA‖Na, ZD‖ct, ZC‖cl, ZB‖Nb, and they make the given angles by conſtruction; draw NS‖cl, and conſeq. = to it, being in the ſame parallels Nc, Ml, and for the ſame reaſon, continuing CZ to L, ZL = ZD becauſe NS = NT; ∴ CZ + ZD = cl the given ſum. Moreover, by ſim. △s, Op : bN :: OP : BZ, and pE : Na :: PE : ZA, ∴ compoundedly □OpE : bNa :: OPE : BZA the given rect. by conſtr. *q. e. d.*

Scholium. If the dif., ratio, of ZD, ZC, or *plus minuſve quam in ratione*, be given, the locus of Z will ſtill be a right line, and the conſtruction very little different.

Note, for the ſake of brevity we have taken the liberty to omit the ingenious analyſis given by Amicus to this difficult queſtion.

The ſame by Mr. Iſaac Dalby, *the Propoſer.*



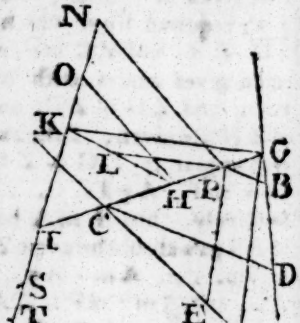
Imagine the thing done, and let AC, DR, NL, mg be the four lines given in poſition, and Z the point required from which ZN, ZG, ZR, and ZC are drawn to make given angles with the lines given, and ZG + ZC, and ZR × ZN are given. Take mF, Ag each equal to ZG + ZC, and draw mF, Ag‖ZC, ZG reſpectively, then if mA be drawn it will paſs thro' the point Z: For, by ſim. △s, Am : Ag :: Zm : ZG, and Am : mF :: ZA : ZC, and becauſe mF = Ag, Zm : ZG :: ZA : ZC, that is Zm : ZA :: ZG : ZC, and by compos. Zm + ZA (Am) : ZG + ZC :: ZA : ZC :: Am : mF, hence by equality ZG + ZC = mF = Ag, theref. mA is the locus of the point Z.—In ZN produced take Zr = ZR, and draw Br, then ZN ×

Z r (Z R) is given in magnitude; draw B H ∥ N L, then N H is given; and because Z N × Z r is given, and Z r, Z H are in a given ratio, the rect. Z H × Z N is given in magnitude, for Z r : Z H :: Z N × Z r : Z N × Z H.—Supposing Z to fall between the points of intersection X, B, then drawing Z V, Z O ∥ Z R, Z N respectively, and producing O Z to v, it follows by sim. △s that Z v = Z V; and because O Z × Z v (Z V) is given in mag. therefore Z h × Z O is given in mag. for Z v : Z h :: O Z × Z v : O Z × Z h. In like manner if Z be taken on the other side of B, and Z L, Z D drawn ∥ Z N, Z R respectively, and in L Z produced, Z d be taken = Z D, and B d be drawn, because of the sim. △s Z B T, Z B h, Z B d, Z B v (H B being produced) and Z D × Z L being given in mag. the rect. L Z × T Z is given in mag. for Z d : Z T :: Z L × Z d (Z D) : Z L × Z T; theref. the rectangles Z L × Z T, Z h × Z O, Z H × Z N are given in mag. and equal to each other; hence this

Constr. Having drawn the locus A m, thro' B draw H S ∥ N L, and A W ∥ Z N, upon S W describe a semicircle, ⊥ to S W take S e the side of a square = Z L × Z T, draw e p ∥ A W, and from p, p, where it cuts the semicircle, draw p P, p P ∥ e S, join e W, and take E W, S K each = e W, then draw K Z, P Z, P Z, E Z ∥ N L, and Z, Z, Z, Z will be four points answering the conditions of the problem. For drawing Z D, Z I, Z V, Z R ∥ Z R (given in position) by sim. △s, they are respectively equal to Z d, Z i, Z v, Z r; and E W × E S (Z L × Z T) = K × W K (Z H × Z N) = e S² = p P² = S P × P W (n Z × Z Q) = W P × P S (O Z × Z h) theref. the constr. is manifest.

Here it is evident that there will be 4 cases when e p cuts the semicircle, 3 where it touches it, and only 2 when it falls without, because then Z will not fall in B X; and when e W is greater than A W, the prob. is impossible.—If the dif. of Z G, Z C, instead of the sum, was given, the constr. will be sim. to the above, because in that case the locus of Z is a right line.

Another Answer to the same by the Rev. Mr. Bownas.

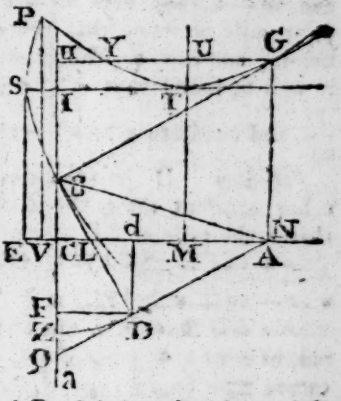


Let G D, C A be the given lines which those are to meet whose sum is given; apply G A, C D each equal the said sum, and meeting C A, G D at A and D in the given angles respectively; join C G: Also make the ∠s G K H, H O I respectively equal to those, which the two lines, whose rectangle is given, are to make with the other two given lines H L, N I. Take G H : G K :: I S : Q the side of a square equal to the given rectangle, and H I : H O :: I T : Q; then determining the point P so that the rectangle P I . P H = rect. I S . I T, it will be the point sought.

For drawing the lines as required, by sim. △s P H : P L :: G H : G K :: (by constr.) I S : Q, and P I : P N :: H I : H O :: (by constr.) I T : Q, hence by mult. P H . P I : P L . P N :: I S . I T : Q², but the rect-

cedents are equal by constr. theref. the consequents must be so too, that is, $PL \cdot PN = Q^2$.—Again, by sim. $\triangle$s CD : CG :: PB : PG, and AG = CD : CG :: PE : PC, theref. PB : PE :: PG : PC, and by compos. PB + PE : PE :: PG + PC = CG : PC :: AG : PE, consequently PB + PE = AG.

XV. (or PRIZE) Quest. 832 answ. by Amicus, *the Proposer*.



Suppose, when the body A is at A moving with an uniform celerity along the right line EN, that the other is at B; draw BV ⊥ BA, then because, by the quest. the velocity of B in direction BV = that in direction BA, the line BL bisecting the ∠ ABV must be a tangent to the path of the body at B. Draw AD ⊥ BL produced, and meeting BC (⊥ to EN) produced in Q; draw FD ∥ CA, and Dd to BQ. and with BD radius describe the arc DZ. Let P be the place of B when it is at rest, the distance thereof from EN being then = AB. Make the square ESTM whose diagonal MS = AB, S being the place of B when A is at M, and consequently ES a tangent to the path at S. Let PYTG be the evolute, BG (⊥ DB) the radius of curvature at B, and let CB produced cut ST in I and GH, ∥ to ST, in H. Then will SI = EC = x, IB = y = IF − BF, AB = a, BD = AD = EM = IC = $a\sqrt{\frac{1}{2}}$ = c, FD = Cd = u, and ∠ dAD = FBD, ∴ dA = BF = w, and Dd = FD = CF = u, IF = $c + u$, y = $c + u - w$, curve SB = z; then by sim. $\triangle$s $\dot{w} : \dot{u} :: \dot{y} = \dot{u} - \dot{w} : \dot{x}$, and $u^2 + w^2 = c^2$, $u\dot{u} = -w\dot{w}$, whence $\dot{x} = -\dot{w} - \dot{u} + \frac{c^2\dot{u}}{w^2}$, and the fluent corrected by considering that at S, $u = 0$, and $w = c$, gives $x = c - w - u + \frac{1}{2}cL$, where L = hyp. log. of $\frac{c+u}{c-u}$, which becomes infinite when $u = c$, theref. producing CF till Ca = BD, a line drawn thro' a ∥ to EN will be the asymptote of the path. Moreover the fluxion of the area SBI = $c\dot{x} + u\dot{x} - w\dot{x} = c\dot{x} - 2u\dot{u} - \frac{c^2\dot{w}}{w}$, and $cx - u^2 + c^2$ h. l. of $\frac{c}{w}$ = the quadrature of SBI. Again $u : c :: \dot{x} : \dot{z} = \frac{c\dot{x}}{u} = \frac{cu - cw}{w}$, hence z = ZD + c. h. l. of $\frac{c}{w}$ = SB. And then by the known rules we shall obtain the radius of curvature BG = $\frac{c}{w} \cdot \overline{w + u}$, or BF : BD :: CA : BG, ∴ by sim. $\triangle$s BG = AQ, but they are both perp. to BD, and consequ parallel, ∴ CA = HG, and letting fall GN, the points A and N coincide, and GN = HC = BQ = $\frac{c^2}{w}$, MA = $x + w + u - c = \frac{1}{2}cL$, its fluxion = $\frac{c^2\dot{u}}{w^2}$ that of the quadrature of TGAM = $\frac{c^2\dot{u}}{w^2} = \frac{c^2}{w^2} \cdot \frac{u^2\dot{u} + w^2\dot{u}}{w} = \frac{c^2}{w^2}\overline{w^2\dot{u} - u\dot{w}}$, fluent = $\frac{c^2u}{w}$

$= BQ$. $FD = CH$. $Cd =$ the quadrature $TGAM$ of the evolute. But when B falls in the curve SP, $BI = BF - IF$, $IF = IC - FC$, $\therefore BI = w + u - c$, $\dot{y} = \dot{w} + \dot{u}$, $\dot{x} = \frac{u}{w} \cdot \dot{w} + \dot{u}$, $\dot{z} = \frac{c}{w} \cdot \overline{w + u}$, rad. of curv. $= \frac{c}{w} \cdot \overline{w - u}$, or a 4th proportional to BF, BD, and $w - u$, but here $w - u = AC$; and a perp. being let fall from y, it will be found that the quadrature cut off by it $= CH$. Cd as before, and conseq. MT produced biſects YG in U. Moreover in SP it will be found that $x = c + u - w - \frac{1}{2} cL$, $z = ZD - c$. h. l. of $\frac{c}{w}$, and quadrature $= u^2 - c^2$. h. l. of $\frac{c}{w} - cx$, as required.

Scholium. If the velocities of B in directions BA and BV be in any other conſtant ratio, the $\angle ABD$ will ſtill be conſtant, and ſo will theref. the ratio of $BD = c$ to DA, let $1 : n :: c : DA :: BF = w : dA = nw :: FD = Cd = u : Dd = FC = nu$, $BI = nu \mp w \pm c$, $z = n \cdot \overline{c - w} \mp u \pm \frac{1}{2} cL$, $z = n$, $ZD \pm c$. h. l. of $\frac{c}{w}$, $\left\{\begin{array}{l}\text{quadrature} = u^2 - 1 \cdot A \pm \\ cx \mp nu^2 \pm nc^2 \text{. h. l. of}\end{array}\right. \frac{c}{w}$, rad. of curvature $= \frac{c}{w} \cdot \overline{nw \pm u}$, and quadrature of the evolute $= \frac{nc^2 \mp u}{w}$. Where $A =$ the area of the circ. ſegment FDZ, and the lower ſign takes place only between S and P. And when $n = 0$, the curve is that to which AB is the conſtant tangent.

Mr. John Whitton alſo anſwered this queſtion. Other ſolutions were received, but they were not true.

New Questions.

I. Question 833, by Mr. Thomas Leigh.

To find the diameter of a balloon, being a ſpherical ſhell of copper, one hundredth of an inch thick, which ſhall juſt float in air, when filled with inflammable air 10 times lighter than common air; Suppoſing copper to be 9 times heavier, and air 800 times lighter than water.

II. Question 834, by Mr. Alex. Rowe, *of Reginnis.*

Mongolfier, with his Air-balloon,
Steering between the earth and moon,
Obſerves with wonder, as he flies,
The ſetting ſun appear to riſe;
And ſees him take his ev'ning's nap
In gentle Thetis' watery lap,
A quarter* after lying ſame
Had ſeen him kiſs the buxom dame.

Tell me, ye Philomaths profound,
How high above earth's ſpacious round
The daring artiſt took his flight,
Soaring beyond frail mortal's ſight,
Far in the liquid fields above,
And rivalling the bird of Jove;
Or him, whoſe fate, as legends fain,
Gave name to the Icarian main.

* Of an hour. This happened at Paris in latitude 48° 50′0, on April 1, the ſun's declination 5° 0′. The radius of the earth is ſuppoſed 4000 miles.

III. Question 835, by Mr. L. Evans.

On a certain day in the ſpring quarter 1782, and in North latitude, I found the difference of the latitude of the place and the meridian altitude of the ſun, to be 14° 29′ 12″·6; and the difference of the ſaid latitude and his altitude at 6, to be 34° 30′ 47″·4. Where and when was this obſervation made?

IV. QUESTION 836, by Mr. Tho. Robinſon, *of Biddick*.

In a given quadrant of a circle it is required to inſcribe the greateſt ſemicircle it will contain, and within the ſemicircle the greateſt ellipſe; and to determine the relation between the axes of the ellipſe and the radii of the quadrant and ſemicircle.

V. QUESTION 837, by Omicron.

A cabinet-maker having a triangular plank, wants to cut two circular tea-boards out of it, both equal, and as large as poſſible. Pleaſe to inform him how he muſt do it with rule and compaſſes only.

VI. QUESTION 838, by x + y.

A Sugar-Loaf hangs twirling high,*
Whoſe ſweets attract a liquoriſh fly,
And whilſt he mounts its ſteep aſcent,
The Cone once round its axis went:

Tell me when all the journey's done,
How far my little Muſca's run,
And as he winds his ſpiral way,
His courſe detect, his route diſplay.

* The cone equilateral, and its ſlant ſide 20 inches.

VII. QUESTION 839, by Mr. J. Turner; *Author of the Mathematical Exerciſes in 6 Numbers, to be had at Meſſrs. Rivington, St. Paul's Church-yard.*

To deſcribe, geometrically, the repreſentation of a great circle, in the orthographic projection, which ſhall make a given angle at a given point with another great circle already projected.

VIII. QUESTION 840, by Lieut. Glenie, *of the Engineers.*

An officer one day aſking another, what was the figure of a certain work, which was the ſubject of converſation, received for anſwer; that it's figure was ſuch, that ſuppoſing a circle to be inſcribed touching the exterior ſides, from which the different parts of it were ſet off, and from any point in the circumference of the ſaid circle perpendiculars be drawn to theſe ſides, the ſquares on theſe perpendiculars would together be always equal to thrice the ſquare inſcribed in the ſaid circle.—Required the figure of the fortification.

IX. QUESTION 841, by the Rev. Mr. John Hellins.

Given the weight of a ball of lead, and the length of a thread by which it is ſuſpended, together with the arch it deſcribes in vibrating; to find the greateſt horizontal force with which it acts on the center of ſuſpenſion.

X. QUESTION 842, by Amicus.

In the equation $\overline{y^2 + x^2 + a^2} \cdot \dot{x}^2 \dot{y} - \overline{2a^2 - 2x^2} \cdot \dot{y}^3 - 3xy\dot{x}\dot{y}^2 - xy\dot{x}^3 = 0$, to find the relation of x and y in finite terms.

XI. QUESTION 843 by Mr. Bonnycaſtle.

Let AB and CD be two diameters, drawn at right angles to each other, in the circle whoſe center is O; then if the radius OB be biſected in E, and on EA there be taken EF equal to EC, CF will be the ſide of the inſcribed pentagon.

This elegant practical conſtruction is given by Ptolemy in his Almageſt; but it has been ſaid that Euclid could not have admitted it into the 4th book of his Elements, on account of its being impoſſible to be demonſtrated by the principles he had previouſly eſtabliſhed. This aſſertion however, is not true, and a demonſtration is now required by means of the firſt 3 books only.

XII. Question 844, by the Rev. Mr. Robert Bownas.

A general rule for finding the two equal roots of an equation of any number of dimensions, is this: "Multiply the coefficient of each term in the equation by its index, and dividing the products by the index of the first term, there arises a second rank of coefficients: Divide the respective differences of these two ranks of coefficients by the difference of the first two unequal terms thereof, and there results a third rank: Divide the differences of the last two ranks in like manner by the difference of their first unequal terms, and a fourth rank will be had; and so on ad libitum, always managing the last two ranks in the same manner in order to a succeeding one; and one of the equal roots sought will always be a root of such depressed equations."—Required the demonstration or investigation, with an illustration of the rule by examples of different equations.

XIII. Question 845, by Mr. George Beck.

Upon a given base to construct such a triangle, that if the vertical angle, and either of the angles at the base be moved along two straight lines given by position, the locus of the other angle at the base may be an ellipse; but if both the angles at the base be moved along the said lines, the locus of the vertex may be a right line passing thro' any given point!

XIV. Question 845, by Mr. George Sanderson.

Given the area of a plane triangle, and the diameter of its circumscribing circle; to determine the sides so, that the ratio of the greater to the less shall be a maximum.

XV. (or Prize) Question 846, by Plus Minus.

Let a thread LMF, equal in length to the indefinite ruler LMR, have one end fixed in the given point F, and the other to the end L of the ruler: Let the ruler move with its other end R in the right line BR given in position, and its edge passing through the given point A; the thread at the same time being stretched close to the edge of the ruler, by means of the pin M; it is required to enumerate the curves which the pin M may describe, according to all the various positions of the given point F.

Query, by Iris.

Supposing there were only three original colours, namely, red, green, and blue; what would be the colour of day light?

*** The prizes have been determined by lot as follows: First, for the prize question, to Amicus 10, and to Mr. John Whitton 8 diaries.---2dly, for the prize enigma, to Philarius and Philadelphia, each 8 diaries.---3dly, for the general merits of the enigmas, to Mr. John Stafford and Mr. David Daniel, each 8 diaries.---4thly, for the queries, &c. to Mr. John Jackson and Mr. Alex. Rowe each 8 diaries. All of whom will please to send for them to Mr. Wilkie, at Stationer's-Hall, London.---N. B. All other letters, containing any matters for the use of the Diary, must be directed thus, "For the Ladies' Diary, Stationer's-Hall, London."

We are sorry that Mr. G. Beck's letter, and Mr. John Jackson's 2d letter came too late to hand to have any use made of them. Mr. W. W. C.'s quest. about husbands and wives, is not limited.

FINIS.